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PAPIER-MACHE UTENSILS.

Probably the most remarkable and useful of modern inventions, and one which is destined to be almost as unlimited in its application as were the inventions of Fulton, Morse, and Goodyear, is presented to the public by the AMERICAN PAPIER MACHE MANUFACTURING COMPANY, of No. 11 Pine street, New-York City, who, by the aid of chemistry and the mechanical arts, have produced from paper, domestic and other utensils, which are far superior for every purpose to articles made from tin, copper, iron, India rubber, gutta percha, or any description of wood. The superiority and speciality of the Papier Maché wares will be readily understood, when it is considered that they are perfectly waterproof, non-absorbent, and therefore entirely inodorous; are almost everlasting, not being liable to breakage, leakage, shrinkage, rust, etc., are non-conductive, and for that reason peculiarly applicable to many uses to which metallic utensils cannot be applied, and are also not affected by acids, nor by extremes of heat and cold. The enamel coating especially prepared for this purpose, is, however, not solely relied upon for the durability of the wares, as the paper is thoroughly impregnated with a water-proof composition; and should the enamel even wear off, the article will not be injured more than in looks. These goods have been subjected to most critical examination at the various State Fairs where they have been exhibited, and have obtained premiums and special mention. They have been exposed to severe tests in all climates, have withstood the action of the most powerful acids, have been used in almost every conceivable manner, and have invariably elicited the highest commendations, and their excellent qualities are cheerfully certified to by all who have used them. The Company are now engaged in the manufacture of water pails, ship buckets, chamber pails, wash basins, spittoons, milk pans, berth cups, and other articles of like character; representations of a few of these utensils being shown in the engraving. The Water Pail will not impart taste to the water, as is thecase with utensils of other materials and particularly of cedar. For family use it is lighter than pails of any other material, and being non-conductive, will keep water cool along time. It is beautifully finished and ornamental in appearance. The Covered or Chamber Pail is far superior to any article for its purpose now in use. It being a non-absorbent, it is unlike pails of tin or wood, free from smell, rust and leakage—can always be kept clean by rinsing. The company also manufacture a heavy pail or bucket which is in great demand, and meets with favor in iron works, foundries, machine shops and other factories, owing to its unsurpassed strength and durability. It is not injured by exposure, boiling water, or powerful acids; and as a fire bucket is unrivalled, and extensively used. Another peculiarity is a Steam Deck Pail, which is a great success. Owners of steamships running in the tropics, have hitherto been compelled to supply their vessels with new sets of pails, buckets, &c., on almost every trip, as no wood or metal could stand the extremes of climate and rough usage to which deck buckets were exposed. The Spittoons are in every way equal, and in many respects, are far preferable to the rubber or gutta percha spittoons, till now considered the best in the market. They possess the decided advantage of being unlike rubber, inodorous, and are very readily cleaned. The Wash Basins are, in appearance, the *fac simile* of a china or porcelain basin; are not effected by boiling water, will not rust, nor break when let fall, and are consequently the most economical. The Berth or "Sick Cups," have given such satisfaction that they find speedy adoption on all ocean lines. The tin and composition japanned cups, bend, break, and sooner or later rust, become offensive, and require great care to keep them clean. The Papier-Maché cups are readily cleansed, are not objectionable in any sense, and are the very thing wanted. In view of the many shortcomings and drawbacks of the hitherto used pans, Papier-Maché has been applied in the manufacture of milk pans, which have been found to possess important advantages over those made of tin, etc. They are non-conductive, and therefore maintain an equable temperature, faciliating the formation of cream, and preventing the spoiling of milk. They can always be kept clean and inodorous by rinsing simply, and do not impart the least taste to the milk. These articles are made and sold by THE AMERICAN PAPIER-MACHE MANUFACTURING COMPANY. Their office is at No 11 Pine street, New York City.

PAPIER-MACHE UTENSILS.

The Facing of Pits and Galleries.—Employment of Concrete.

(*Translated from La Houille For the London Colliery Guardian.*)

The walling of the sides of shafts in places where the rocks are not sufficiently solid, or possessed of sufficient resisting power, is commonly composed of either stone or brick. During recent years various parties have begun to make use of conglomerate concrete, a purely artificial material, for building, which is simple as regards the process of preparation, and easy to be used, while at the same time presenting a great resistance and perfect impermeability, which latter quality renders it extremely valuable for works that are in contact with water. Amongst the structures raised of late years presenting a certain amount of importance, and in which the conglomerate concrete has been employed, we may specify many buildings at St. Denis, the drains of the new Opera House, the Church of Vesinet, the vaults of the subterranean galleries of the Exhibition, the breast wall of the Avenue l'Emperor, from Pompe to the lamp beyond the Military Bakehouse. At the present moment they are constructing with this concrete, to the height of above fifteen metres, the sloping boundary wall of the ancient cemetery of Passy. The concrete used is a cement rather than concrete proper. It is composed by the very intimate mixture of the following elements in determined proportions, thus:

Large sand, very pure	4 parts.
Lime	1 "
Portland cement	1-2 "

Water, 1-10th of the total weight of the mixture.

Instead of making with the sand and lime a mortar in liquid batter, the preparer must reduce as far as possible the quantity of water, and subject the mixture to an energetic and prolonged course of trituration. By this trituration, notwithstanding the great reduction of the water, there is at length obtained a dusty paste, which, after a continued process of pounding, is brought into the state of very stiff plastic paste. This is poured out into a moveable mould in successive and very thin layers, and subjected to vigorous pugging. This pugging effects such an agglomeration that there enters into each cubic metre of masonry from 14 to 15 hectolitres of the mixture, while the mass itself acquires a considerable rapidity and intensity of hold; so much so that some few days or even hours suffice to give it the consistency of stone. Now as the work done one day becomes perfectly consolidated with that of the day before, it follows that the mass of masonry may be indefinitely extended, so as to form one actual block of stone which offers a perfect resistance to frost and heat. This concrete thus forms a veritable stone paste, to which, by means of moulds, all sorts of forms may be given, and which will not present any joint, but possesses throughout a solidity not otherwise attainable. In order that the conglomerate concrete may present all the required conditions of resistance and of serviceable usage, it is necessary that the preparation should be well made. It consists of the following process: 1st. The greatest part of the water contained in the common mortars as concrete must be got rid of. 2nd. The substance must be homogeneously and intimately mixed, notwithstanding the elimination of the water, by being subjected to a trituration energetic, prolonged, and operating with compression. 3rd. From this trituration there must result successively a condition of hard plasticity, a pasty powder, and then a dusty paste. 4th. Agglomeration is next to be produced by the action of a hard and heavy body operating on thin successive layers poured out in proportion into a mould. By fixing moveable moulds on the actual masonry, which it is required to raise to a further elevation, we may indefinitely augment its mass, and obtain, so to speak, stone without limit which advantageously takes the place of hewn stone and brick. The concrete, set under favorable conditions, offers a great resistance to picking or wearing of any kind, and its resistance to crushing reaches to from 400 500 kilog. per cubic metre. With regard to its producing or net cost price, it will vary in different localities, and will mainly depend on the rate of wages for manual labor.

We are persuaded that this concrete can be advantageously employed in mines, its imperviousness to water and its power of resistance suiting it even for bottoming in crossing watery strata. Shafts walled with concrete would resist better and for a longer time than those faced with stone or even brick, by reason of the intimate union of its constituent elements and of their adherence to the bare surfaces which require to be faced. The facing of galleries, the fixing of conduits for water and for air, may also be done in concrete, and any movements in the earth will only produce therein fissures that may be easily repaired and filled up again with the same concrete, which will at once become incorporated with the old mass. The facing of shafts especially may be effected with great facility and great regularity. It would suffice, in fact, to suspend from a certain special rope, well fixed over the middle of the shaft, a box with very smooth exterior sides, of the diameter to be given to the shaft requiring to be faced, and behind this they could pug the concrete. As soon as a certain elevation had been attained, they could raise the box, pug anew, and so continue until they had reached the summit of the structure.

Safety Explosives.

The disasters that have occurred through ignorance and carelessness in using and transporting nitro-glycerine and other explosives seems to have once more turned the attention of our British brethren toward the so-called "safety powders," and as the most recent invention in this direction we may notice that of Dr. Nisser. The inventor makes two compositions, non-explosive while apart, and sifts them together when required for use. The powders, therefore, can be stored and transported with perfect safety. The ingredients of one composition, we believe, are mainly chlorate of potash and nitre; the other is composed of sulphur, woody fiber, and some cheap carbonaceous materials. When these two compounds are sifted together a powder results which, from experiments made in Cornwall on some of the largest granites, seems to possess about four times the strength of ordinary blasting-powder, and which, we are told, costs rather less than the blasting powder. The mixed composition we have seen did not explode either on friction or percussion. A great prejudice exists against the employment of chlorate of potash in explosives, on the supposition that the manufacture must be dangerous. Employed this way, however, there is really no risk in the manufacture or mixing. Safety powders of this kind, we should mention, are not novelties. Similar compositions were patented by Ehrhardt some years since, on which these profess to be an improvement. Ehrhardt made use of expensive materials, and thus an invention otherwise valuable has not come much into use. Miners and quarrymen are too apt to consider cheapness before anything else.

Practical Letters.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

LESSONS ON MECHANICAL DRAWING.

No. XIV.

BY T. P. PEMBERTON.

SCALES.

Simple Scales, such as I have already alluded to, are made of ivory, boxwood, metal or cardboard. They have straight edges divided into equal parts, which are generally fractions of a foot or inch. In making drawings of machinery, it is generally necessary to represent the parts, not of the real sizes to which they are made, but to some known scale, so that all the proportions of the parts are accurately maintained. For instance, were we to make drawings of a steam-engine, we should select some convenient size for the drawing. We might, for example, represent the engine one-eighth of its real size, and should then form a scale, every inch of which would stand for eight inches of the real work, every foot for eight feet, and every inch and a half for one foot. This would be called a scale of one-eighth real size, or a scale of an inch and a half to a foot; because an inch and a half is the eighth part of a foot.

Now, in making the drawing, or measuring from it when made, it would be troublesome and tedious to calculate what should be the size, as drawn, of each dimension of the work; but having first formed a scale, we can at once apply it to the drawing, and set off any required dimension in feet and inches. The simple scales are those mostly recognized in practice, and the most convenient are:

6	inches	to 1 foot, or	1-2	real size.
3	"	"	1-4	"
2	"	"	1-6	"
1 1-2	"	"	1-8	"
1	"	"	1-12	"
1-2	"	"	1-24	"
1-4	"	"	1-48	"
1-8	"	"	1-96	"

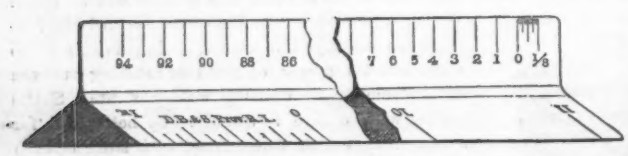


Fig. 1.—Silver-Plated Triangular Scale.

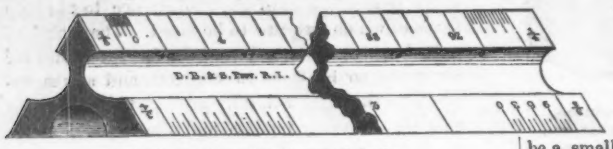


Fig. 2.—Triangular Boxwood Scale.

The above engravings represent two descriptions of scales very convenient for architects and mechanical draughtsmen. They are made from twelve to twenty-four inches in length. The silver-plated metallic one (Fig. 1,) has six scales, viz.: 1-8, 1-4, 3-8, 1-2, 3-4 and 1 inch to the foot, and the triangular boxwood one (Fig. 2), has scales of 1-8, 1-4, 3-8, 1-2, 3-4, 1, 1 1-2, 3, 2, and 4 inches to the foot.

For architectural drawings, and drawings of large works generally, the following scales will be found convenient, in addition to the above:

1	inch to	10	feet, or	1-120	real size.
1	"	20	"	1-240	"
1	"	40	"	1-480	"
1	"	50	"	1-600	"
1	"	80	"	1-960	"
1	"	100	"	1-1200	"

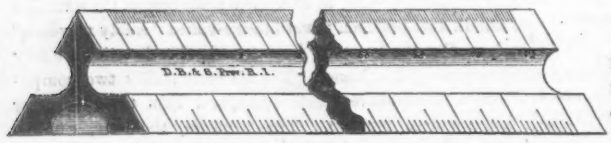


Fig. 3.—Scale for Railroad Engineers and Surveyors.

Fig. 3 shows a boxwood triangular scale, with edges divided into 10ths, 20ths, 30ths, 40ths, 50ths and 60ths of an inch. For drawings of land surveys, it is usual to employ chains as units of measurement, and scales are therefore made in terms of them, such as ten chains to one inch, and the like.

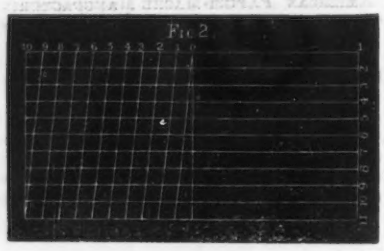
In plans of railway or canal works, it is often necessary to measure various curves; and as the curves are generally made arcs of circles for ease of setting out and execution. Circular scales, divided equally round their circumference, are sometimes employed.

DIAGONAL SCALES.

A "diagonal scale," giving the fractional parts of an inch in *twelfths*, can be constructed as follows: Draw seven horizontal parallel lines, and divide these by perpendicular lines into any number of equal spaces which may represent feet. From the middle point of the top line of the first division draw the diagonal lines which will intersect all the horizontal lines. Number the points of intersection as 1, 2, 3, etc.; and also the perpendicular lines as 1, 2, 3, etc.; beginning on the third line to the right; the scale is then complete. The points of intersection by the diagonals represent twelfths or inches, and the perpendicular lines as feet. One example

will suffice: Suppose 1 foot and 4 inches were required from this scale; the points of the dividers would be placed on the third horizontal line from the top, and extended to the "4" on the diagonal line. In using this scale, however, the compasses are required; and therefore it is not convenient for general use.

The "decimal diagonal scale" is constructed in a similar manner, viz.: by the intersection of diagonal and horizontal lines. Fig. 2 exhibits a decimal scale of one inch to the foot



—the first division being divided into *tenths*. Draw eleven equidistant and parallel lines, forming ten equal spaces, and a perpendicular line to represent one foot. Divide the first division into ten equal parts at the top and bottom lines, and draw the diagonal lines. By this means the unit of measure is divided into 100 equal parts. Example:—If 1 foot and 5-10ths, (written 12·5") were required, the compass points would be placed on 1 and five on the top line. Again, if I required 12·8", the compass points would be extended from 1 to 8 diagonal. In like manner, for 12·4", the compass would embrace the top line and 4 diagonal; for 12·41", the second line and 4 diagonal; for 12·42", the third line and 4 diagonal; for 12·43", the fourth line and 4 diagonal: for ·5", the top line, from 0 to 5; for ·9", the same line, from 0 to 9; for 12·9", the same line and 9 diagonal; and for ·11, the second line and 1 diagonal.

The student will at once see that the fractional parts are measured entirely on the *diagonal* part of the scale; the 12 inches (or one foot) being the unit of measure.

In every box of instruments there is, or should be a small plain scale, 6" long. On this scale are found, marked small simple scales, 1-4" or 1-8" to 1 foot, and *two* o the "decimal diagonal scales."

Steel straight edges and scales, as commonly used by machinists and engineers in the workshop, should never be used by draughtsmen in conjunction with drawing-paper and instruments. Paper or card-board scales, when they can be obtained, may be used in preference to all others. Dimensions can be marked off from scales on to drawing paper with a well-sharpened pencil and not taken off with the compass, as the steel points would soon obliterate the fine lines of division.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

ON THE VENTILATION OF COAL MINES.—NO. XII.

BY J. W. HARDEN, M. E.

RELATIVE VALUE OF POWER USED.

Guibal's and Fabry's machines bear a more favorable comparison, yet in the examples given they do not reach the standard of comparative excellence assigned them by your contributor.

It will have been seen, that in France and Belgium, where mechanical ventilation is most in use, the engineers are not quite agreed as to the merits of the respective machines, yet none of them attribute a higher measure of power to any of them than that in the examples we have instanced, and this gives rise to the inquiry, "Why, with such deep pits as many of them are, is not the furnace in more general use?" This inquiry is anticipated by your contributor in the following paragraph.

After alluding to the theoretical disparity between the cost of increased temperature and the consequent increase of air, he continues by saying: "Besides the condition that the upcast shall have a considerable depth, the fact that the air courses shall be very large, in order to allow a sufficient volume of air to be circulated at a slight velocity, and that in mines producing fire-damp, the use of the furnace is always attended with more or less danger, even where most expensive precautions have been taken to render it safe; and that when most required—after accidents—the furnace is capable of but very slight increase in its work. These are the considerations, and not the lega enactments which apply to mines producing fire-damps, nor yet the 'moderate depths' (*sic*) of their mines which have induced the French and Belgian engineers to prefer mechanical ventilators, as much more economical, safe, and efficient than the furnace."

Why he should call particular attention to "moderate depths," in alluding to the depths of these mines, I don't know. I have not used the expression in regard to them. Though not seeing them, we read that some of them are very deep, and practical men know, that with such depths, and properly made shafts, the furnace would be their most efficient and economical ventilating power; but when he talks of such depths as 2,500 and 3,411 feet, he includes the declivity of a plane from their bottom, or the depth "attained" in working the coal outwardly, or the depth at which vertical, or nearly vertical seams are worked, by which means only surface of vein, or remunerative quantity, can be obtained.

The commissioners sent to the continent by the British Government, tell us that "machinery is more used owing to the shafts being lined with wood, and therefore dangerous to the use of the furnace;" that very few of the shafts are bricked, nor is it common to brick them, either in France, Belgium, or Prussia, and that they are also very small. "In all the colleries we visited"—say they—"we met with one only where the shafts were bricked throughout. In Belgium, the furnace is inadmissable by law, unless fed with fresh air; although, as a general rule, there is not a large quantity of fire-damp in any of the Continental mines. There is most at Liege, and it appears to decrease westward, until, in the same basin, at Valenciennes, in mines of 1,500 feet deep, there is scarcely any; and where the collieries are most fiery, they are not to be ranked with the moderately fiery mines of England. Sudden escapes of gas are seldom known, and when it was applied, we found the furnace very small, and the temperature of the upcast disproportionally low."

On this subject, in their own report, we find the Belgian engineers saying, "the furnace has always a great advantage where the shaft is deep and dry, and of area sufficient for it to develop its power; in such cases 80 per cent. of the effect due to it in theory is obtained, whereas, where the shafts are shallow and wet, it developes only 20 to 25 per cent. of the same power." And in giving the comparative annual cost of working these same furnaces, they say: "In that furnace which utilizes 80 per cent. of the heat generated, the expense was 1,222 francs. In Combe's fan, it was 1,755 francs, and in the furnace utilizing only 55 per cent. of the heat generated, 4,034 francs, and in a furnace placed on the surface, with a chimney above it, of which there are yet examples to be found, the expense was 15,414 francs per annum.

"Besides the condition that the upcast shall have considerable depth," it would have been well to have given, at least, an approximate definition of what is considered a considerable depth. What is looked upon as such in the neighborhood from which I write would not be so in the deep mines to which your contributor has directed attention. With dry upcasts, and with the mining science of the present day, no shaft ought to be put down wet. I have worked the furnace at depths of upcast varying from 300 to 900 feet and upwards, and at 390 feet, with a considerable amount of fired-amp generating, and without casualty, the precautions alluded to by your contributor not being disregarded. Such precautions necessarily increase the first cost in erection, but it is all to be measured in the number of yards of "dumb drift" to be driven, and that of a drift for supplying the furnace with an amount of fresh air, the advantages of which have been considered in my former letters.

Mr. MACKWORTH, the gentleman before alluded to, one of the greatest advocates of mechanical ventilation, in his evidence before a coroner's inquisition after an explosion, where it had been suspected that the firedamp had fired at the furnace, says: "In almost every mine good furnace ventilation, accompanied by a dumb drift for the passage of the foul or return air, is adequate to remove those sudden effusions of gas without danger."

A Slate House.

A correspondent thus describes a novel house recently built at Brownsville, Me.: "This house is not only shingled, but is clapboarded with slate. It is a slate edifice, fire-proof and indestructible. The slates are put on to the boarding of the walls with only paper between. They are in the form of segments of a circle, overlapping each other, and have a very ornamental effect. The natural color of the slate is pleasing to the eye, and no paint is needed. If it were, the slate would furnish it, for when ground it makes an excellent paint, which Mr. Sparrow has used on his barn with good effect. The whole establishment is elegant in appearance, and shows what can be done with native materials. The front steps are of beautiful slabs of slate: the sinks, mantles, shelves, are of slate; the woodwork is of brown ash, a native wood, which makes a handsome finish. In short, this is a real State of Maine house, and shows the wealth of her resources. The slate costs little if any more than clapboards. When the railroad brings this material to us, slate houses must become fashionable."

Mining Summary.

GOLD AND SILVER.

Lower California.

A correspondent of the San Francisno *Bulletin* is writing a series of very interesting letters on the results of his explorations in Lower California. The following, in which an account is given of the mineral resources of the country will undoubtedly interest our readers most. The writer says:—"There has hardly been a hill or gulch on the whole peninsula that has not been prospected to some extent; openings are found out in the heart of the most desert regions; miles from water will be found shanties, near some deserted shaft, opened in high hopes of fortune, and abandoned in disappointment. The result of this thorough exploration of the country has been to circumscribe earnest, actual mining within very small limits, and to confine the search almost exclusively to the two metals—silver and copper.

GOLD.

"Gold exists in small quantities in various places, but rarely in greater abundance than in our own coast range. There are a hundred places where a "color" can be occasionally obtained, but this will not satisfy a white man. In the immediate vicinity of San Antonio, women have been in the habit, from time immemorial, of washing the sand of the arroyo in "bateas" or wooden bowls, and obtaining small pay; in the hills east of the city of San Jose del Cabo, an occasional nugget has been picked up; big stories are told of this region, and if gold is ever found in paying quantities, it seems probable it will be among these hills. It is a little triangular tract of low rolling land, terminating northward at Muertos Bay and eastward by Cape Palmo. Water is said to be scarce, and the cost of a flume across the San Jose valley would be so great, that only a deposit of unprecedented richness would warrant the expense. It is not impossible, though it seems hardly probable, that gold-bearing quartz veins may yet be found, of sufficient value to warrant mining.

"In the heart of the table lands toward the middle of the Peninsula, we found several arastras, with fragments of quartz lying around, but we were told that, after a fair trial, the work had been abandoned for want of pay. This was especially the case at San Sebastian, where the quartz was found in irregular streaks and seams; it was all of extremely low grade, and all the ore crushed was carried by the men on their backs, in hide buckets, from the mine to the arastra. For these reasons, therefore, we feel warranted in asserting that the gold mining interests of Lower California do not promise to ever become of much importance.

SILVER.

"Silver is more promising. All the mines of this metal are confined to the mountain range lying south and southwest of La Paz, and are comprised in the districts of San Antonio, Cacar Chilas and one or two others of lesser note, and of doubtful value. The San Antonio district lies about forty-five miles south of La Paz, and a hundred and twenty-four or five north of Cape San Lucas, by the trail, though much less in a direct line; it is five or six miles long, covers a range of hills, one of the spurs of the great San Lazaro chain, and comprises two sets of veins. The first of these, containing two or three, nearly parallel veins, has all of the mines now being worked, and is the only one in the Territory of which the value has been established. Among the mines of the group are all of these belonging to the Triunfo Company, the two mines of the Mexican Company, the Franco-American, the Fortuna, the Soledad, Santa Maria and some others of lesser note.

THE TRIUNFO MINE.

The first of these, the Triunfo, has been described by other correspondents, more than once in your columns, and a short notice is all that I need give. The company possesses half a dozen claims, lying in a compact form, and are working but two or three. At the time of our visit they were sinking a shaft on the vein of the Mendocena, already nearly six hundred feet deep, and in ore all of the way, and were running a tunnel from the face of the hill in the Molinena, the adjoining claim, also in excellent pay, expecting to intersect the shaft above mentioned, at a depth of 700 feet. This would give them one of the finest mines of silver ore it has ever been the writer's good fortune to see. The two mines had both been thoroughly prospected, the former having six levels of from fifty to three hundred feet long, on each side of the shaft, showing almost everywhere a vein of ore averaging about four feet in thickness. The Superintendent assured us that he obtained an average of six tons of mill ore for every running foot of tunnel in the low levels. There was no water worth mentioning, not enough to interfere with comfortable work, and that little would be gotten rid of as soon as the work in the two claims shall have united. The ore is of reasonable richness, running from $90 to $124 per ton, some of the better class going beyond $200, but there exists a serious drawback in the character of the mineral, it being antimonial ore, and extremely difficult of economical reduction. A fine 14-stamp mill has been erected by the company, and has been running since January, 1867, during which time upwards of $150,000 worth of silver has been produced, according to the most reliable data we can obtain. This is a large sum, but still does not seem to be as much as ought to have been produced. The expenses of working are heavy and the profit proportionately small; and we are informed that the stockholders are not entirely satisfied. But then that's a habit they have; who ever knew stockholders to be satisfied under any circumstances? Besides the two mines above mentioned, the company has done considerable work on several others of their claims. Some 1,500 tons from the Carmen mine yielded from $70 to $120 per ton, and the Caroa and Valenciane were having tunnels run with a view to striking the vein at a considerable depth from the surface. May it not be that it is this 'dead work' that runs away with the profits?

THE MEXICAN MINES.

"The 'Mexican mines,' the San Pedro and San Nicholas, have been worked successfully for nine or ten years, by a mixed company of Mexican and German merchants of Mazatlan. They are under the superintendence of Don Conrado Flores, a graduate of the School of Mines of Mexico, who works them closely, though not in so neat a manner as is usually pursued by our engineers. The drifts are small, crooked and narrow, and reminds one of rat holes; the ventilation is extremely defective, the heat unbearable, and the means of ingress and egress are poor and inefficient. The only workmanlike job on the premises is a tunnel, which was run by a German engineer, during the absence of the regular superintendent. The ore of these mines is taken to the surface, picked, the poor ore rejected, and the higher grade shipped to Europe, at a cost for mining and transportation of $72 per ton.

SANTA MARIA MINE.

The Santa Maria, adjoining the Mendocena, is a good mine; considerable work has been done here, and some of its drifts connect with the latter claim. Future work, however, will mostly be below 'water level,' and expensive pumping apparatus will be required. The vein has all the characters in the ground that it possesses in the adjacent mines already described. Some of the other mines of this group are undoubtedly valuable, enough work having already been done to demonstrate that fact; though from their belonging to parties of limited means, who bought them during the mining fever, without considering that 'it takes a mine to work a mine,' they are now practically abandoned, their owners in a high state of chronic disgust against the business, and waiting for 'something to turn up' by which they can get their money back, or at least save a part of it.

"I mentioned two groups of veins about San Antonio; the one not yet described has been purposely neglected, for the reason that I can find nothing to say in its favor. Innumerable claims exist in and around the town, some based on small veins, some on nothing, some have produced a little ore, some have made big promises and cannot fulfill them. In the winter of 1867, all had stopped work but one, and that was sure to fail before long.

THE CACACHILAS DISTRICT.

Outside of the San Antonio district, the only one of note is Cacachilas, in the mountains of the same name, southeast of La Paz, and on the opposite side of the range. We did not visit the district, though we heard fabulous stories of its richness. But we were too old birds to be caught with chaff; the ore didn't look well, the mines had all stopped and we did not go there. I do not wish to be understood as saying more than this: the district is claimed to be good by some, denounced as worthless by others, all work has been abandoned, and from the hearsay evidence we collected and the specimens we saw, we had no faith in its value.

NEW MINING LOCALITIES.

"Numerous other localities are mentioned as containing silver veins, and no doubt truthfully; among these are the western spurs of the main chain, south of Todos Santos; also, some spots of the long canon on the east side of San Lazaro and elsewhere in the vicinity; but the presence of the metal is by no means a proof of the value of the mines; the quantity that may be found there has yet to be demonstrated.

COPPER.

"Copper has been found in various places in the south, as at Calabazos, on the road from Triunfo to La Paz, where the number of claims is only equalled by their worthlessness. The Sauce mine, near Loreto, has been often quoted, and some native metal has been brought from there, but the deposit is irregular, unreliable, and in all probability valueless. In the northern part of the territory is the Delphine mine, which has already been described in a previous letter. This is the only copper mine on the peninsula for which any future can be hoped or expected, and further work will have to be done before its value can be positively proven. In the granite plains between Santa Maria and the Llano de Buenos Ayres veins of copper are reported, but we did not learn of them until it was too late to visit them; and, from the nature of the country in that vicinity, the entire absence of water and wood, it is probably safe to say that they can never be worked, be they ever so rich.

SALT.

"The only other mineral product of any importance in the Territory is salt. This has been produced extensively in two principal localities—Carmen Island and San Quentin. The first of these we did not visit; it lies in the Gulf of California, a little below Loreto, and in full sight from the shore. The salt from there is so well known in San Francisco as not to need description. The other salt ponds, those of San Quentin, are on the west coast, about 150 or 160 miles below San Diego; they have been already described, were abandoned at the time of our visit, and, from what we learned, because of the expenses—including working, shipping and duties—amounting to more than the salt could be sold for. Should the country ever become American, the abolishment of the duties to the Mexican Government, and of the customs in San Francisco will leave a fair margin for profits, and the ponds will become valuable.

"From the above account you will see that the mineral wealth of Lower California is by no means as great as it has usually been represented.

GENERAL RESULTS.

"The mines are few, though some are very good; they are confined to a small space, and the good ones are well known. There is very little room for prospectors to go out and "locate" good properties, though men with capital can yet find excellent chances for investment, if they are willing to spend large sums of money to obtain good returns."

California.

Alpine County.—Mining news to the 5th ult, reported in the Monitor *Miner*, reads as follows: "The Globe tunnel is still cutting small veins of quartz, outlaying feeders to the main lode, that look well. . . . Quartz in the Rippon Claim looks well and they seem to have a large body of it. . . . The latest news from the Schenectady Company, (the owners of the Tarshish mine) is, that they have passed an order to issue their bonds to the amount of $75,000, for the purpose of raising money to open up the mine and build a mill. R. W. Green who is now putting in the dam of the Mt. Bullion Company, has taken the contract to put in a dam for the Monitor Consolidated Company, 10 feet high, 30 feet between abutments, 30 feet breadth of foundation, well planked; the abutment to be three feet higher than the dam. The whole to be finished by the first of November. . . . E. Arnold, of the Leviathan Company, has sold one-half his interest to County Recorder Jones, for $1,000 coin. . . . The Engine, Boiler, Pumps, Hoisting works, etc., for the Morning Star Company, weighing over 35,000 pounds in all, are *en route* for the mine. . . The IXL mine is said to be yielding richer ore than ever before. Superintendent Slaven increases his working force as fast as good miners present themselves. . . . Robert Ludgate and J. Miller, of Ione City have discovered and located a coal mine, about two miles southeast of Ione City, and the croppings are said to equal the best coal taken from the old mine."

Amador County.—The Jackson *Ledger*, of September 12th, has the following: "Just now the coal mine of James Morgan, in Ione Valley, presents a lively appearance. We learn that 20 tons per day are being taken out and shipped to the Oneida Quartz Mill, where it is being used very successfully. Two other mines are being opened near this one, and the prospect for an abundance of fuel for our mills is very encouraging. We also learn that Messrs. Coney & Bigelow intend trying this coal in their chlorodation works at this place. . . . A short visit to the Oneida mine amply repaid us for the time. Sixty stamps in a line and all in successful operation is a sight worth seeing. The ore now taken out is said to be of much better quality than has been reduced for some time past, and judging from its appearance, it is certainly good. Jones & Co., lately of Grass Valley, are erecting several English buddles for concentrating sulphurets." . . . The same paper, of September 5, has the following: "The noted quartz mine at Pine Grove, known as the Anaconda, has been sold to parties in San Francisco. Steam hoisting works will be immediately placed upon the Anaconda. Fine rock has been taken from the main shaft within the past two weeks, and it is believed by those who know the mine, that the purchaser has made a good and certain investment. . . . At a depth of 375 feet, the lode in the Casco mine has been found seven feet wide, and the rock is of a very flattering quality, in many places showing free gold. Preparations have been made to erect a 20 stamp mill on the mine. . . . The Kennedy mill has been completed, and will commence crushing rock some time during the coming week. . . . Philip Seibenthaler's new quartz mine on Foster's Ridge, above Volcano, continues its rich yield. A drift of 80 feet southerly, was found to contain ore equal to the best in the shaft, and the run of 66 tons paid over $25 to the ton."

Calaveras County.—Hardenburgh & Co. whose mine is located near Middle Bar, have struck very rich ore at the depth of 300 feet. It is said that the rock will average $100 per ton. . . . A Rich Gulch correspondent writes: "From the level now being run from the north shaft southerly, there is being taken ore of a higher grade than the Palomo Mining Co. have extracted heretofore."

Mariposa County.—Advices to September 4 report: "Already much of the damage done by the floods of last winter has been repaired, and in a short time the mills will be in successful operation again. The new 20 stamp mill belonging to John Hite, of Hite's Cove, is successfully running and crushing the rich ores taken from his inexhaustible mine. The mine in Hunter's Valley, known as the Oakes & Reese vein, is producing rich ore and getting better every day. A new water mill is in course of construction at the Buckingham Mountain; the company has already on hand, ready for crushing, about 100 tons of rock, which they consider rich in the precious metal. The Mariposa Co. has commenced work in earnest on the dam at the Benton Mills, on the Merced river."

Mono County.—A dispatch to the San Francisco *Times*, dated Aurora, August 25th, gives the following: "The largest amount of bullion ever brought to this town for assay, arrived here today from Benton, Blind Springs District, Mono County, Cal., and was deposited at the banking house of F. Garesche. It was smelted in Williams & Wekland's furnace, out of ore from the Diana mine, located in that district, and owned by these gentlemen. There are 137 bars, weighing 8,843 lbs. As it has not yet been assayed the value is unknown."

Placer County.—The Dutch Flat *Enquirer*, Aug. 29, says: "All the mining claims of this vicinity have suspended operations for the present season. The last one, the Jehosephat, hauled off during the early part of the week. Mr. Beals has quite a number of men engaged cleaning up his large flums in the canon below town, and when this will be finished the mining hereabouts will be confined to preparing for the coming season. The Jehosephat, we learn, paid during the last run of twenty-five days, at the rate of one hundred dollars per day." . . . The Placer *Herald*, of Aug. 29th, says: "T. M. Sincox & Co. who own and work the galena ledge, situated on Antony ravine, about half a mile from Newcastle, had fifteen tons of surface rocks crushed at the St. Lawrence mill, below Ophir, some ten days ago, which yielded 120 per ton in free gold. This is a remarkable yield for surface rock, and without having worked the sulphurets." . . . A Gold Run correspondent writes: "I do not think that at any time since the mining season commenced, there has been more doing in that branch than at the present time. George Slocum & Co. are sinking their shaft rapidly, and we expect soon to hear that they have struck a big thing in the blue gravel; if they do, the bottom ground around this place will last a number of years. The claims of Messrs. Huyck & Co., Carr & Co., Brogan and Co., cleaned up last week, and as far as we can learn, fully realized the expectation s of their owners."

Plumas County.—A Quincy paper of August 15th, says: "Hallsted's mill, in Granite Basin, has been running about a week, crushing rock from the Jennie ledge. The mill crushes about 14 tons per day, and will clean up shortly. From the prospects, they think they have some good paying quartz."

Colorado.

We condense from files of the latest papers received from this territory, the following interesting summary of mining news: Miller & Bufferton's mill, at Black Hawk, has shut down for a few days to put in a new flume for their water power. Hays has shut down the New York mill for a few days, to mend breakages. It is expected that fifty stamps will be running in the Consolidated Gregory Company's mill by the first of November. Twenty-three stamps are now running on the Bobtail ores in the Sterling mill. This mill formerly had only fifteen stamps, but has been thoroughly repaired and renovated. . . . The Narragansett mine on Gregory Hill, under the superintendence of E. J. Sweet, is turning out about eighteen cords of ore per week, which yields from one hundred and forty to one hundred and eighty dollars per cord. The mine at present is supplied with water from the lake, but they hope to reach water in the mine before winter. The main shaft is now about three hundred and seventy-five feet deep. When first re-opened a few months ago, it was necessary to force air into the mine, on account of the damp, which prevented work, but it is not necessary now. There are twenty stamps now running in the mill, which drop about twenty-four times per minute, and in a few days thirty more will be in operation. . . . Woodbury & Co. are fitting up the old Peregrine mill below Black Hawk, to run, we understand, on custom quartz. They have bought the engine formerly used in Lyon's smelting works, which they are setting up in the mill, and will put in more stamps, making a forty stamper of it. It will be in operation in a short time. . . . The Consolidated Gregory, under the management of Mr. Richman, are putting up fifty stamps in the old Lyon Smelting Works. They are now nearly ready to run. . . . A ton of silver ore per day is being taken from the Gilpin County Tunnel, below Black Hawk, which is sold for $300 per ton to Professor Hill. . . . The reduction works of J. O. Stewart, at Georgetown, are now running, and it is thought they will be successful. Their capacity is two tons per day, and any kind of ore found in Griffith district will be treated. A large supply of custom ore is already engaged, and an unlimited quantity can be had as fast as it can be handled. There is nothing new about these works; the common reverbatory furnace being used for smelting the galena ores, and the sulphurets are treated for roasting and amalgamating in pans. The dressing works are complete and perfect, separating the heavy galena from the rock and dirt, while the sulphurets are saved in settling. . . . Mr. Herrick is taking down the old smelting furnace, at the Georgetown works, which had become thoroughly unfit for use. The hearth, some 36 inches in thickness, has lost its entire original character as brick, and is a mass of silver, lead riches, and sulphide and oxide of lead. It is estimated that it will produce 15 tons of lead. Tests made from different portions and different characters of its material, gives from $500 to $1,000 in silver to the ton. . . . The Baker Co. have erected a large mill which is situated on Clear Creek, about four miles below the mine. It is one of the finest in the territory. When completed it will have three of the California cylinders for the treatment of sulphuret ores. The smelting and cupel furnace are now finished, and a test run has been made with satisfactory results. The mine does not yield sufficient galena ore to

keep the smelting furnace constantly employed, but a considerable quantity has been obtained from the Hampton lode, which is situated in the vicinity, and is owned by Mr. Watson. This mine now has a vein of from six to eight inches of solid galena in the end of the drift. . . . Another new water mill is to be erected this Fall by Fields & Lake, on North Clear Creek, just above and adjoining the Arighi mill. It is to be a 25 stamper, 600 pounds stamps. Grading has been commenced for the building, which is to be 35x40. Messrs. Fields & Lake have 850 feet of a water power, with fall sufficient for a 28 foot wheel. They will also put an addition in the main building, to be used as a pan room. It is their intention to have the mill completed as soon as possible. . . . Borham, Miller & Co. are working No. 1 East, on the Bates or Hunter, night and day, and have kept the Polar Star mill, at Black Hawk, busy crushing ore for them, until recently. Sanderson & Co. on the west of them, are still shoving matters and things on the discovery claim, and are having their ore crushed by Mr. L. C. Miley, in the Hillbrook mill—8 stamps—and the University company's mill—15 stamps—both of which are being run by this gentleman. Colonel Tannett, east of this, and in Gregory gulch, on the Bates lode proper, has two levels commenced, and is raising a very nice quality of ores. He continues sinking, and by the time his new thirty stamper is in order for the reception and crushing of ore, will have his mine in such a shape as to furnish an unlimited supply. The Colonel has built 1,700 feet of fluming, which he will put down between his mill and the works of the Bobtail Drainage company, so as to give him a clear head of water with which to supply his mill batteries this winter. Just opposite the company's works, Ed. Moore is running the Wilson mill—15 stamps—on ore from a new discovery on Mammoth Hill, which he and Mr. Anderson have recently made. Above the Wilson mill, Mr. Fuller is keeping the Kip & Buell Company's twelve stamper busily engaged on sound quality ore from the Bobtail Company's claims on the "Roberttail Narrative" lode, and we learn with good success. Miller & Hatch are still running their line of sluicing. G. K. Sabin is working his usual force of hands in the Union company's mine, on the Bates, and running his ore through the Douglas mill, Chase gulch. . . . A great deal of ore is being mined both in East and West Argentine. Professor Dibbin is erecting furnaces at East Argentine, but how soon they will be completed is uuknown. . . . At Empire, Messrs. Haskins & Cooley are now running two arastras on ore from the Silver Mountain lode. Messrs. Ball & Munson are running the Knickerbocker mill on ore from the same lode. Messrs. Rose, James & Jeffreys are putting up a new process for roasting ore in the Peck mill. Messrs. Yerkes & Stull are putting a new engine and other machinery into a mill preparatory to starting. The Conqueror lode, worked by Messrs. Disbro & Bro. is turning out a good quality of rich ore. These men are making a good income by their labor. . . . There are also four arastras in operation. They have been running all summer, mostly on surface ores from the Conqueror and other neighboring lodes, and the results have been very satisfactory.

Nevada.

White Pine.—A. F. White, Nevada State Geologist, is still engaged in his labors of visiting the mines of the State and gathering information, as required by law. In his rounds he has delivered some lectures upon the mining interests of the State. A recent letter to the Carson *Appeal* by him, says :—"White Pine Mining District is about eight miles square. Within it are three mineral belts. The first occupies the western slope of White Pine Mountain. The ore has produced from fifty to one hundred and twenty dollor per ton and is abundant. The ledges are from two to six and eight feet in width. The second belt lies along the eastern slope of White Pine Mountain—assays of ore from different ledges show from twenty to six hundred dollars per ton in silver, from forty to fifty per cent. lead, and from twenty to thirty per cent. copper. The third belt is the one attracting so much public attention. It lies on the summit and western slope of Treasure Hill, and adjoins the second named on the east." After describing the formation of the belts, Mr. White refers to yields, as follows :—"A specimen was taken from the Keystone mine on the 17th of July weighing thirty-one pounds almost purehorn silver, estimated value, three hundred dollars. Another of similar richness was taken from the same mine yesterday, weighing seventy-five pounds. Several tons of ore from different mines in this mineral belt have been worked in Austin, and produced over a thousand dollars per ton, according to returns just received. Mines are not opened enough to give an opinion on their permanency. The Aurora has openings made along its croppings for about six hundred feet, and at each opening the ore is abundant and rich in almost all cases. It is obtained under the surface by uncovering and loosening up with a pick, but is more compact further down. I have a specimen of limestone rich in silver. All assays and tests thus far prove the bullion very pure; it is estimated at 960 fine."

Silver Bend.—The *Mountain Champion* reports a very rich strike in the El Dorado North Mine, belonging to the Belmont Company, and now under the management of Col. David E. Buel. It learned from the foreman of the mine that a great body of rich ore had just been struck in the general incline which is being sunk on the line of demarcation between the two mines. Full two feet of the ledge yields ore which is estimated to pay from $6,000, to $10,000 per ton. It is characterized as the richest body of ore yet discovered in the district.

Newark.—The Austin *Reveille*, Sept. 28th, says :—"The Centenary mill, in the district of Newark, under the management of S. H. Folsom, is one of the productive works of this part of the State. Mr. Folsom shipped on Saturday to the grocery and provision house of W. S. Gage & Co. in this city, 26 bars of bullion, valued at $32,413; this swells the amount shipped by him to that firm during the present month to $84,409 90. The larger part of this bullion was produced by ore obtained from the Eberhart South in the district of White Pine; the remainder was produced by the Chihuahua mine of the Centenary Company. We learn that that mine presents an unusually fine appearance, and is supplying five stamps of the mill with ore. Good management has resulted in substantial results both in the mill and the mines of the company.

Reese River.—White Pine is rich; but Lander Hill appears occasionally with a rich streak. The *Reveille*, Sept. 26th, says: "A ton of ore extracted from the Saratoga mine in Lander Hill, which has been just reduced at the Manhattan mill, gave a pulp assay of $1,497." . .¶. The South American mine in Lander Hill continues to justify the belief of Superintendent Triplett that it is one of the valuable mines of the district. Of it the same paper, of Sept. 27th, says :—"Fifty-seven tons of the first-class ore, which were reduced at the Manhattan mill, yielded an average of $302 per ton. The vein is above the average size of those held in Lander Hill, and widens out at points to five feet; but the body of valuable ore in the vein is embraced in a stratum ranging from six to fifteen inches wide. The ore is a simple sulphuret, and is very easily reduced."

Nevada County.—The San Fiancisco *Alta California* says: "It is stated by parties who ought to know positively, that the celebrated Allison Gold Quartz Mine, near Grass Valley, is to be sold at auction within the next sixty days, to close out the present partnership between the proprietors, which has been an unfortunate one, not on account of the mine itself, but the disagreement among the parties interested. The mine has yielded over three millions of dollars, as the books of the United States Branch Mint in this city will show, and when work was stopped there was pay rock above the lower level sufficient to employ 200 men a year in taking it out, while the company had not a dollar of debt against it. The greatest depth yet attained is 500 feet, at which the mine looked as promising as ever. There is a good twelve stamp mill, with all the fixtures and appointments for hoisting, etc. The fact that such a mine should be permitted to fill up with water, lie idle and unproductive for years, and finally be sold out at auction, is one of the most curious illustrations of the perversity of human nature which we have ever heard of." . . From late Nevada papers we condense the following items of news: "The Empire mill cleaned up the sum of $40,000 recently, after a run of 22 days. . . . The mines at Eureka are looking remarkably well. The Jim mine, or as it is now called, the Mutual Gold Mining Co.'s 5 stamp mill is yielding a very good quality of rock. The last clean up, after a run of 33 days, gave 150 ozs. The gold is of excellent quality, being worth $17 50 per ounce. The Valentine mill, which has 10 stamps, is doing a good business and crushing a fine quality of rock. . . . The Rising Star quartz mine, located on Deer Creek, is yielding very rich quartz. . . . The Birchville Co. at Eureka have struck the ledge in their new tunnel and found it exceedingly rich. . . . Charles Phelps, the original locator of Phelps' Hill, near Washington, has made a rich strike. . . . Branbury & Stacy have struck a very rich ledge in their claim at Graniteville. . . . The North Bloomfield Gravel Co. now employs in all between sixty and eighty men. About fifty of these are at work upon the new ditch, which they are building for the purpose of connecting water from Poor Man's Creek, near Eureka, to the mines on the ridge. The ditch will be about twenty-four miles long. . . . Atwater & Knotwell, at Moore's Flat, cleaned up recently from top dirts about $6,000. They expect by working a force of ten men to clean up in the next sixty days at least $14,000.

Tuolumne County.—On the afternoon of the 21st ult., the quartz mill of the Messrs. Fry, commonly known as the "Fry & Comstock Mill," caught fire, in the absence of the proprietors, and was entirely consumed. This mill was situated at the Fry & Comstosk mine, near Calder's ranch, in the mountains, about ten miles east of Sonora. It was run by steam and worked ten stamps. Insured for $6,000.

Montana.

We are indebted to the Deer Dodge City *Independent*, Sept. 5, for the following items of news from the Gulch Mines: "Messrs. Delarimer & McChord's hydraulic claim, situate in Cooley's Dry Gulch, a tributary of Highland, is still paying remarkably well. A large amount of gold has been taken out this season, and the prospects are good for it to continue to pay for several years. Glanton, Leggatt & Co. are making rapid progress with their bed-rock flume. It is confidently believed that they will have their claims opened and in good running order in four weeks. Flowers & Co. and Nevins & Co. are still making very successful runs with their arastras. The Highland Gold Mining Company, of which Prof. Swallow is the leading spirit, are displaying commendable energy in the erection of the fine mill belonging to this company. The utmost confidence is felt by all that it will prove a success. . . . Washington Gulch, an old and well-known camp, bids fair ere long to equal the days of '64. A large ditch has been constructed from Nevada Creek, a distance of nine miles, that will furnish water for a large number of mines. It was cut for several miles through slide rock, and great difficulty and delay have been encountered in getting the ditch to hold water. Water is now running through it to American Gulch. It is thought the water will be running into Washington in a few weeks. When completed times will be lively, as some of the bars are as rich as any worked in Montana. . . . The miners on Silver Bow Creek are, and have been during the entire season, doing better than at any time during the past two years. The bar claims are nearly all lying idle for want of water. This drawback will be obviated in the future, as a ditch is being constructed that it is believed will furnish an abundance of water the entire season. . . . The miners on Jefferson Gulch are not doing very well at present, and will not, as a general thing, until next Spring. The best pay is on a bar which can only be successfully worked by hydraulics. The scarcity of water has compelled the suspension of work for the season. Wm. Lowar & Co. have run a drain some four hundred feet, to drain the flat below the upper town. They have just completed it, and in a few days expect to be making big runs, as they have fine prospects. . . . Wm. Roe, one of Montana's pioneer miners, recently discovered and opened a bar on Pike Peak Gulch, which prospects finely. The pay streak is over two hundred feet in width, and will pay from eight to twenty dollars per day to the hand. . . . The miners on McClellan Gulch—at least, such as have got water—are doing well. Lafferty & Co.'s diggings are paying about $10 per day to the men. Price & Co. are doing well, but we do not know how much per day their claim is paying. White & Co., near the head of the gulch, are making the "biggest kind" of wages with a rocker. . . . Water is now running through Richardson & Co.'s ditch, into Lincoln Gulch. This work has been completed at great expense, and we hope the proprietors will be richly rewarded for their enterprise. Much ground, not heretofore worked for want of water, will now yield a handsome return to the fortunate owners. This ditch, together with the various drain ditches nearly completed, cannot fail to make business brisk in Lincoln in a short time."

South Carolina.

YORK DIST., S. C., Sept. 16, 1868.

EDITOR AMERICAN JOURNAL OF MINING:

I have been a reader of your valuable paper for the last twelve months, and if you will pardon me, I will take the liberty of complaining that more is not said of the mining regions of Georgia, Virginia, North and South Carolina. This can be accounted for, I suppose, from the fact that nearly all of those engaged in mining *ante bellum* were unscientific, self-taught and self-reliant. They were frequently successful, and good sense and experience in the working of a certain class of ores supplied the want of science. Whenever they met with a novel formation or a new and obstinate class of minerals, they withdrew to other fields of enterprise.

For these reasons, the mines of the South-eastern States have always been underrated, and the reader of Mr. JAMES M. TAYLOR'S report, I am sorry to say, would not have his mind disabused of any erroneous impressions heretofore entertained as to the value or extent of our mineral resources. He draws the inference from "twenty years' experience" in California, Colorado and Nova Scotia, that the vein-stones of the Alleghany range holds "bodies of ore downward" which would warrant deep quartz mining." This was certainly a wide stretch of the imagination. If Mr. TAYLOR had really known anything of the mines in the Alleghany belt, he would have known that the fact to which he gives such prominence in his report, was known by miners here 20 years ago. It is the universal experience that all our veins increase in richness and sometimes in size, the deeper they are developed, and that what is called a cap-rock is no indication that the mine is extinct. It did not require California or Colorado to teach us this practical fact. But the miners operating in the south were frequently compelled, by the pressure of water and the difficulty of raising ores, to abandon their mines, when at a great depth they were getting richer at every advance. The want of capital applied by science and of that confidence which science and a wide experience gives, was frequently the cause of the abandonment of rich mines. Another cause, perhaps the most prolific of evil, was the fact that most of our mines were owned by *farmers*, who leased out their mines from year to year; and as a matter of course, the lessee worked for present gains exclusively, and avoided deep mining and expensive machinery. We are satisfied, Sir Roderick Murchison's opinion to the contrary, that the regular quartz veins of Georgia and the Carolinas are inexhaustible, and we know from experience that their richness increases with their depth.

But my main object in writing to you, Mr. Editor, is to suggest, that a series of practical articles on these southern mines would extend the circulation and usefulness of your Journal here, as well as accomplish a greatly-desired result in calling the attention of capitalists to a field of investment which offers more flattering inducements than California or Colorado. But to do this, only one course presents itself; that is to send a correspondent to make a tour among our mines, to spend a week or two in each mining neighborhood, to listen to the old miners, who for 20 years have delved in the earth, and then to describe faithfully and minutely the past history and present prospects of the various leading mines. Some of the many mining engineers in New York might undertake the work, and make it pay you, themselves, and the country, by a thorough canvass of this rich field of labor. It would well repay your New York Mining companies to send competent agents here to report on our mineral resources instead of to California and the sunset west. In order to get a full description of the mines in this region, it will require personal inspection and laborious research; and rich will be the reward of the competent scientist who undertakes the task. Send us a gentleman who commands the confidence of your capitalists, and we will satisfy them that they have a Eldarado nearer home than the snow-capped peaks of Sierra Nevada.

WHITKER.

Idaho.

RICH STRIKES—NEWS FROM FLINT DISTRICT.

The Silver City *Avalanche* of the 26th ult. comes to us with the following intelligence: "Cope & Co. have struck fabulously rich gold bearing quartz in the Potosi. The lode was found cropping out on the surface three or four hundred feet south of the tunnel. Large crowds flocked to see the new discovery and to compliment the lucky owners. All who have seen it unhesitatingly declare that it is the richest deposit of gold ore ever found in this or any other mining camp. We saw a piece weighing about fifty pounds, which, after being broken into fragments, was held together by threads of solid gold that penetrate the mass in every direction. . . . . David Meek has found a quartz lode on the mountain, west of the Baxter and between the Silver Cord and Savage. It is called the Appuremack and prospects are rich in gold and silver. . . . The owners of the first South Extension of the Savage have held a meeting and decided to commence work. A tunnel has been started near the north end of the claim that will tap the lode at right angles. It is confidently expected that a few weeks' work will develop a rich mine. . . . The news from Flint District is more cheering than ever. The ore in the Rising Star gets richer the deeper the mine is prospected. A deposit of remarkably rich ore was struck recently. Mr. Perry is still at work sinking on the Forest. The shaft is now down 140 feet, where the lode is about 12 feet between the casings. There is a granite horse in the center and rich pay quartz on each side. The granite becomes less and the pay streaks wider the deeper it is worked.

COPPER.

Michigan.

The following September products of the Lake Superior Copper Mines are at hand:

RIDGE MINE.		
Mass	6 tons	603 lbs
Barrel	13 tons	1,794 lbs
Total	20 tons	397 lbs
HANCOCK MINE.		
Mass	5 tons	1,280 lbs
Stamps	20 tons	037 lbs
Total	25 tons	1,317 lbs
EVERGREEN BLUFF.		
Mass	7 tons	1,097 lbs
Barrel	12 tons	1,462 lbs
Stamp	8 tons	896 lbs
Total	28 tons	1,456 lbs
KNOWLTON MINE.		
Mass	0 tons	400 lbs
Barrel	5 tons	331 lbs
Stamps	12 tons	138 lbs
Total	17 tons	869 lbs
OGIMA MINE.		
Stamp	4 tons	970 lbs
Barrel	1 tons	1,734 lbs
Mass	0 tons	1,719 lbs
Total	6 tons	1,393 lbs
PEWABIC MINE.		
Stamp, barrel and mass	60 tons	500 lbs

The *Portage Lake Mining Gazette*, October 8, to which we are indebted for the above figures, has a lengthy summary of mining news, from which we condense the following items: "Relative to the Shelden-Columbian discovery we learn that the vein in which the mass was found is 259 feet east of the conglomerate, and 940 feet east of the Isle Royale. In this heretofore unexplored strip there are several quartzose and epidotal transverses, four of which have first been opened by Mr. Forster in his work this season. All of them have shown more or less copper, and there have been abundant indications of a vein or lode of value existing somewhere in the vicinity. The mass found has been dug out and weighed; it was a sheet of copper, smooth-sided but irregular in shape, nearly eight feet from end to end, and varying from three-fourths to five and one-half inches thick. Its weight was eight hundred and seventy-five pounds. Enough detached pieces have been taken out to make the total of copper from the pit no less than half a ton. The outcrop of the vein in which this copper was found is very much broken up and decomposed. It has been dug into, at the deepest, but little more than four feet, exclusive of six feet of drift, and has been stripped about fifteen feet. In the bottom of the pit, the vein showed about three feet wide, having a smooth footwall, containing fair stamp work. The last work in the bottom brought out several good

pieces of barrel copper, and there is no doubt that when sinking is commenced, other chunks and masses will be found equally as good. Two or three other pits have been started. . . . . The Isle Royale Trainway is at work sending rock to the mill, but the amount on hand to be stamped is not large. Whether the mill will be started up is doubtful. The explorations at the juncture have developed nothing new beyond the facts that the course of the conglomerate is nearly due north and traceable for half a mile, and that a couple hundred feet away in that direction from the creek workings the amygdaloid and fluccan underlying it there have disappeared, and the sandstone abuts the conglomerate in a more natural position. In one of the middle field pits, a large, coarse spar vein has been cut, but nothing need be expected from it. The sandwiched belt of amygdaloid has produced a few small nuggets of copper, and is being looked for at another point. The contact vein in which masses have been lately found on the adjoining property (Shelden-Columbian), runs entirely across the Isle Royale location. It was cut in a little knob that was beaten down to grade the railroad track, where it seems promising in appearance, though split and containing no copper. But the line of outcrop for a long distance shows so many signs of having been worked into some considerable time ago, either by the ancients or very early explorers, that we should not be surprised if a re-examination would develope something of value. It is not improbable that the intersection of the transverse feeder occurs somewhere near the north line of the property, and if so, there is little doubt that a rich deposit would be found. . . . . Work in the Franklin mill is progressing finely. . . . . Reports from the captains of the Hancock state that the stopes in the backs of the first and second levels are yielding well. A winze sinking to connect the two is in very fine ground. The work in the south end of the thirty is also showing increased richness. But the best show of all is in the fifty, which is in from the shaft about one hundred and fifty feet. Here the vein is so heavily charged with copper that it has been almost impossible to drift through it the past week, and it is quite probable that they have been compelled to turn it aside to get along. From these indications, and the fact that the shoot being worked so profitably in the backs of the ten and twenty is one hundred feet south of the present end of the fifty, there is every reason to believe the level will be the richest ever opened in the Hancock. . . . . The Huron miners report that the lower and south openings are looking very rich in copper of the coarser varieties. But half duty is made by the rock-house or stamps, owing to the continued short supply of water. . . . . The September product of the South Pawabic was eighty-five tons.

California.

We learn from a Jackson paper of August 22d, that the smelting works at the Newton copper mine are being rapidly pushed to completion.

IRON.

Pennsylvania.

A rich and apparently inexhaustible deposit of fossil iron ore was recently discovered on the Barree Forge and Furnace property belonging to Messrs. Green, in Porter township, Huntingdon County. A correspondent of the *Huntingdon Journal*, who has been visiting the locality, thus refers to specimens of this ore, of which the editor of the *Journal* says there is a sufficient quantity to keep a hundred furnaces in blast for a year: "I have just examined, with much surprise and no little interest, what seems to be a mineralogical wonder, in the shape of a large block of fossil iron ore, one of the most magnificent specimens I have ever seen. It was taken from a block vein on the eastern side of 'Short Mountain,' a portion of Tussey's Mountain, lying between the two rivers—Big and Little Juniata. The vein from which it was taken is about one and a half miles from the Barree Iron Works, on the property of Messrs. Green. After being removed, it was brought to the furnace, and found to weigh 3,150 pounds. It is a solid mass of rich, pure ore, presenting a surface outside as smooth and regular as if dressed by a marble cutter, and measures sixty-two inches in length by thirty-two inches in breadth. There are other blocks at the mine from which this was taken, but none so large have as yet been discovered. It is the intention of the Messrs. Green to have it analyzed by a competent chemist, and there is little doubt of its yielding 50 or 60 per cent. of pure iron, if not more. The discovery of this ore, in its present locality, fully corroborates the opinion given a few months since by Prof. Morley, mining engineer of the Cambria Iron Works, together with that of Mr. Trimbath, an experienced miner. It is well worth a visit from mineralogists and scientific men, as well as all those engaged in the manufacture of iron."

Rhode Island.

In the old French war, a century ago, iron was taken for casting ordnance from the ore beds of Cumberland, R. I. This mine has been abandoned for many years. The N. Y. *Stockholder* says of the ore and the locality of the mine: "Of several analyses none has shown less than 33 per cent. of metal in the surface rock even. The ore contains no sulphur or phosphorus, but has alumina, silica, magnesia and manganese, with a small per centage of titanic acid, which last is believed to add to the value of the iron. Extensive peat beds are found near the mine, and limestone is abundant in the region. The Newport coal, which has been found peculiarly advantageous for smelting iron, can also be very conveniently brought to the place. The surface ore is now shipped to Pennsylvania in large quantities, to be mixed with ores of that State."

Natural Growth.

Professor Tyndall's address at the late meeting of the British Association, in which he promulgated the doctrine that just in the same way in which a crystal is built up into some definite form by the action of molecular forces, so a plant or animal is built up in its proper form by the action of similar forces, has drawn attention to a subject of great interest to the scientific observer, and expresses convictions towards which enlightened opinion has long been converging. To express the same idea in a manner still more comprehensive, we may say that in the physical, as well as in the moral world, everything acts in the line of least resistance. When, therefore, a crystal of a certain salt assumes a definite configuration it is because, with the given forces in operation, it is more easy for it to assume that shape than any other; or, in other words, because the formation of the crystal in this particular shape involves the expenditure of the least amount of work. A homogeneous body like wet starch cracks, in cooling, into hexagonal columns, because where a certain amount of cracking has to be accomplished to permit contraction the hexagonal form is that which involves the minimum amount of cracking for a given contraction, just as in a honeycomb the hexagon is the form which enables chambers of a certain size to be formed with the least wax. We see the operation of the same law in the case of basaltic columns which owe their special configuration to the necessity of the mass contracting, which will be done by cracking in the lines of least resistance. So, if forces are put into operation which induce growth in a plant or animal, the nature of the growth will be determined by the direction given to these forces, or the combination effected among them by the action of the plant or animal, or of the germ from which either of these is produced. It does not, however, follow (as Professor Tyndall very justly says) that thought or mind is the result of organization, though organization is necessary to enable mind to be manifested. But just as the eye is an instrument for informing the consciousness of the existence and nature of the forces which we denominate light, so the brain may be an instrument for intercepting other forces flowing to us from the celestial sphere, but which forces cannot be determined by the unassisted senses. One manifestation of the existence of such forces may be observed in the instinct of animals whereby they are impelled to do certain things they not know why, and which seem to imply that their acts are governed by forces exterior to themselves.—*The Illustrated London News.*

Manufacturing and Mechanical Notes

No. XXXVI.

The American Vapor Stove.

The advantages of this stove can only be fully realized by actual trial, and it is claimed to surpass all others in baking, roasting, broiling, toasting, heating tailor's geese and flat-irons, and is applicable to an endless variety of mechanical purposes. The fuel used is the combined vapor of water and naptha, by which an intense heat is obtained without producing ashes, smoke, unpleasant odor, or unhealthy vapor. The air of a room is rendered moist and agreeable by it, and the carbonic acid gas, which is so injurious in rooms warmed by other stoves, is absorbed by this process. No wick is employed—no smell of coal oil comes from it—and the pipes do not clog or gum any more than they would with pure water or alcohol.

The principle upon which the invention rests may be

briefly described, as follows:—When petroleum is clarified or distilled, the first running is a light, colorless fluid, which emits a rank smell, and is highly inflammable. If burned with a wick, like kerosene, it smokes badly, and is offensive. The inventor of the vapor stove, after a great number of experiments, ascertained that by the application of heat to a tube filled with this fluid, it may be converted into gas, and when this gas is properly combined with the vapor of water and with the common air the mixture burns freely, gives out a strong and steady heat, but no smoke, gas, or odor of any kind. This discovery once made, the mind of the inventor was turned upon the problem of making this apparatus so simple, so cheap, and so safe as to cause the vapor stove to be a necessary part of the furniture of every well-appointed kitchen. A can containing two gallons of the gasoline, or naptha, is fastened at the height of five feet from the floor and removed by quite an interval from the stove. A tube conducts the fluid down and horizontally to the burner, its end curving under like a fish-hook, so that the burner comes directly under the tube about a foot from the end. Now, if the faucet is turned so as to let the fluid on, the hydraulic pressure will force a small jet from the orifice of the burner and throw it directly upon the tube above. Within this tube is inserted a fine coil of copper wire, which presents to the gasoline a large heating surface. Ignite this little jet of fluid and the heat in the tube which contains the coil of wire will soon be very great, so as to convert the naptha from a fluid into a gas. The pressure of the fluid in the tube and can renders it impossible for the gas to escape through the can. It must pass out at the orifice of the burner. Now beneath the burner a water-cup is attached, so as to be kept hot by it. The vapor rising from this water mixes with the gas from the burner, and both are blended with common air. The heat thus generated is steady, intense, uniform, easily regulated, and its degree and application wholly under control.

These stoves are not only a great saving of time and labor, but also of expense; as the consumption of fuel by this new process proves that it is a saving of more than one-half the outlay in using either coal or wood.

All communications in reference to this apparatus should be addressed to the "American Vapor Stove Co.," No. 484 Broadway, New York City.

Scientific Meetings.

THE NEW YORK SOCIETY OF PRACTICAL ENGINEERING.

The stated semi-monthly meeting of the Society of Practical Engineering was held on the evening of Tuesday, October 13th, at Room 24, Cooper Institute. The President, James A. Whitney, in the chair. W. B. Harrison, Recording Secretary.

The regular paper read before the society was upon "Atmospheric Propulsion and Atmospheric Motors for Elevated and other Railways," by Mr. Perry Dickson, giving in detail various experiments, in which the principal features, beside the ordinary track and rails are a pipe or tube of the proper dimensions running the whole length of the road, and having a longitudinal valve in the top or side through its whole length; the power for the propulsion of the cars being the pressure of the atmosphere obtained by exhausting the air in front of the piston attached to the car, the connection with the car being made by a stem projecting up through the longitudinal slit in the pipe forming the valve, and so constructed as to prevent any leakage of air. The difficulties and impracticability of this plan were then shown, inasmuch as friction and leakage were too great to be overcome by practice.

The Blackwell's Road, near London, was then referred to, in which the cars were driven by the pressure of the atmosphere. The tube upon this road was eighteen inches in diameter, and bored like an engine cylinder the entire length of the road. The difficulties and objections to this road is the cost of boring out a tube of such length, and also the friction of piston and piston-rods, which was augmented for want of proper lubricators. Also, that the piston had to travel in the tube the same distance that the car traveled.

The most feasible plan presented was that of carrying reservoir tanks aboard the car, large enough to supply the engine with compressed air, and propel it from one station to another; but as it is impossible to carry tanks large enough to run any great distance, it would necessitate frequent stoppages, which, in the ordinary hasty method of traveling, would soon become unpopular.

The pneumatic tube system was then referred to, in which the tube is made large enough to contain the car, which acts as a piston; but the objections raised to this was a wastage of power, and the friction would be proportionate to the velocity of the car. If the end of the car had much clearance, then there would be leakage, and where a brush had been employed to obviate this, it only saves leakage enough to balance the friction caused by the brush.

The requirements of atmospheric propulsion are that the compressing engines be located at the termini of the route, and the propelling machine be aboard the car, where it can be controlled and lubricated. The car must be supplied with compressed air as nearly constantly as possible, to avoid the necessity of hauling large reservoir tanks; the least number of connections must be made per mile, and with the least waste of air possible.

Mr. Dickson then referred to a plan of his own, which combined some of the features of the old plans of pneumatic railways, with new applications and a device for easy compression and propelling power. It consists in a tube laid the whole length of the road, which is connected at the termini and at suitable intervals along the line of road with pumping engines, which condense the air into large stationary reservoir tanks, to which the pipe is connected by branch pipes, and supplying tanks located under the seats of the car or any convenient place. This plan is adapted to elevated as well as underground railways, and it is believed will prove more economical than steam.

The subject for the next meeting was announced to be "City Sewerage," and the society adjourned for two weeks.

☞ The Paris *Patrie* says:—"The celebrated phrase of General Foy will probably be remembered; he said from the tribune of the Chamber of Deputies, on the occasion of the bill for granting an indemnity of a thousand millions of francs to the French *emigres*: 'Do you know that an equal number of minutes has not elapsed since the death of Jesus Christ!' Although those words were pronounced nearly half a century ago, we have not even yet attained the amount. On the 25th of December next, calculating twenty bissextile years in every hundred, there will only have passed 982,368,000 minutes since the birth of our Saviour. A twelve-month contains 525,600, so that we shall have to wait another thirty years before reaching this famous milliard, which will only be completed in 1902. Taking the average of human life, more than nine-tenths of the beings actually existing on the surface of the globe will not arrive at that date."

MARKET REVIEW.

Friday Evening, Oct. 16, 1868.

Gold and Silver Stocks.—The market continues more lively in Colorados, but in other stocks there is no noticable change. Large sales of Smith & Parmelee are reported at $6.65@$6.75—a considerable advance in prices. Nevada stocks are still depressed, and it is rumored that the Twin River Company has gone into bankruptcy. Combination is, however, in better favor, and some holders are asking $8.00 Prices are thus quoted at the Stock Board:

	Bid.	Asked.		Bid.	Asked
Alameda Silver	.. ..	40	Kipp & Buell Gold	.. ..	10
American Flag	.. ..	50	La Crosse Gold	24	25
Bates & Baxter Gold	.. ..	50	Liberty Gold	.. ..	6
Benton Gold	25	26	Manhattan Silver	100 00	.. ..
Bobtail Gold	.. ..	1 25	Midas Silver	25	..
Combination Silver	5 00	8 00	Montana Gold	59	60
Consolidated Gregory	4 05	4 20	New York	1 25	1 30
Edgehill Mining	....	3 60	Nye Gold	.. ..	3
Gold Hill	.. ..	....	Owyhee Mining	25 00	....
Gunnell Gold	.. ..	60	People's G. & S. of Cal	.. ..	
Grass Valley	40	..	Quartz Hill	1 05	1 10
Hamilton G. & S. B.	.. ..	55	Rocky Mountain Gold	11	.. 20
Holman	.. ..	6	Smith & Parmlee Gold	6 75	6 80
Hope Gold	.. ..	10	Texas Gold	.. ..	10
Twin River Silver	.. .	10 00	Corydon	10	25
Gunnell Union	.. ..	35	Edgehill Mining	.. ..	3 60

Copper Stocks.—Davidson is quoted at 50@60c.; Flint Steel River, $1.75; Minnesota, $2.00, and Mendata, $1.75.

The following will show the prices of mining stocks bid in Bos on this day, (Oct. 16.)

Copper Falls	17	Quincy	17
Franklin	14¼	Cary Improvement	10
Hancock	4¼	Water Power	16¼
Minnesota	2	Bos. Hart. & Erie R. R.	27

Petroleum Stocks.—Many stocks show a marked advance in prices, being thus quoted:

	Bid.	Asked.		Bid.	Asked.
Bennehoff Run	.. 25	..	Rynd Farm	20	22
Brevoort	90	.. 95	United Pet. Farms	.. ..	.. ..
Buchanan Farm	53	56	Union	8 00	10 00
Central	50	55	United States	2 05	2 50
National	3 25	3 50	Sherman & Barnsdale	.. ..	1 25
N. Y. and Alleghany	.. ..	2 00	Second National	.. 2	.. ..
Pithole Creek	40	90	Bliven	.. ..	.. ..
Home Petroleum	2 00	.. ..	Rathbone	20	1 00

Miscellaneous Stocks.—Quicksilver Mining Co. is quoted at 26; Mariposa Trustee, 10's ctfs., 67; Del. & H. C., 128½; Cumb. Pref., 35@35½; Western Union Tel., 37½; Mariposa Mining Co., 8¼@8½; Mariposa Pref., 24½; Pacific Mail S., 127½@129; Wells-Fargo Express, 80½; American Express, 46½; Merchant's Union Express, 22½; N. Y. Central R. R., 128½@129; Erie R. R., 42@42½; Reading, 97½@97½; Clev. & Pitts., 90½; Mich. S. & N. I., 89@90½; C. & N. W., 96½@97; C. & N. W. R. R. Pref., 97½@97½; Cleveland & Toledo, 104½@105; Ill. Cen. R. R., 145; Chi. & R. I., 108½; Milwaukee & St. Paul R. R., 107; Milwaukee & St. Paul Pref., 108@108½; Ohio & Miss., 31½@32; P., Ft. W. & Chi., 114½; A. & T. A., 44½@45; Tol. W. & W., 64; Del., L. & W., 130; H. & St. J. R. R. Pref., 88½@89; D. & Sioux C. R., 95; Chi. & Alt., 154½@155½.

Government Stocks.—The market for Governments is again active and higher—prices being thus quoted to-day:

U. S. 6s, 1881, coupon	115½@	115¾
U. S. 5-20s, 1862, coupon	114¾	114¾
U. S. 5-20s, 1864, coupon	111¾	112
U. S. 5-20s, 1865, coupon	112	112½
U. S. 5-20s, 1865, new coupon	110¼	110¾
U. S. 5-20s, 1867, coupon	110¾	110¾
U. S. 5-20s, 1868, coupon	112¼	112¾
U. S. 10-40s, ex. coupon	105¾	106

Foreign Exchange.—Foreign exchange is quiet and weak. The importers are buying little, and although the current supply of bills is very light, yet it is more than up to the demand. Leading drawers are asking 109¼ for 60 days' sterling, and 109½@110 for sight. We quote:

London (prime bankers'), 60 days	109½@	109¾
London (prime bankers'), sight	109¾	110
London, prime commercial	109	109¼
Paris (bankers'), long	5.17½	5.16¼
Paris (bankers'), short	5.15	5.13¾
Antwerp	5 18¾	5.15
Swiss	5.18¾	5.15
Hamburg	36	36¼
Amsterdam (bankers')	41	41¼
Frankfort (bankers')	40¾	41
Bremen (bankers')	79¾	79½
Berlin (bankers')	71½	71¾

Gold.—Gold opened at 137¼, but sold down to 137½ towards the close. This morning's bids for Government Gold aggregated $8,100,000, or about $1,000,000 less than yesterday., and ranged from 136.80 to 137.57. Cash gold continues scarce, and loans are made at from 1.32 to 4.64 per cent. per day "for borrowing."

American silver is in limited request at 6@6½c. below the price of gold. Mexican dollars are quoted at 102½@103 in gold.

Money continues to gain slightly in ease. Some of the banks have departed from their 7 per cent. rule, and are employing a portion of their balances at 6 per cent. and on the "street the rate is very generally 6 per cent.

Small remittances of currency are coming from the banks of Cincinnati and Chicago; but these receipts are more than set off by the remittances to the South and to the banks of the minor cities.

Discounts are fairly active. There is a healthy confidence in business paper, and 3 to 4 months' paper of good standing is readily negotiated at 7 per cent.

Petroleum.—For crude, in bulk, there is a very limited inquiry from the refiners; the extreme prices demanded check trade; held at 16c. Refined, standard white—the export inquiry is still unimportant; prices are unsettled and weak; the business is wholly in settlement of contracts, including 4,500 bbls. at 29c. Naptha is offered at a considerable decline; 1,250 bbls. were sold on private terms. For Philadelphia delivery there is not much disposition to purchase, even at the concessions made; forced sales are reported, including standard white, at 27½c.; also, 3,000 bbls. at 28c.

Receipts for the week ending Oct. 13	pkgs.	19,496
Exports for the week ending Oct. 13	galls.	1,101,534
Exports from Jan. 1	galls.	43,091,568
Exports same time last year	galls.	23,392,642

The following is the quantity exported from other ports, Jan. 1 to Oct. 10.

	1868.	1967.
From Boston, galls.	1,965,178	1,607,276
Philadelphia	29,771,244	22,230,575
Baltimore	2,101,331	1,238,768
Portland	568,970	800
Total	34,406,723	25,077,419
Total exports from the United States	79,040,849	48,982,811
Same time in 1866		48,714,383
Same time in 1865		17,321,464

Copper has been quiet but steady. Sales for the week foot up 600,000 lbs, at 23 @23¼ for all kinds. At the close Detroit is held at 23½. Portage Lake and Baltimore 23½. For end of November delivery 23½ has been paid for Detroit.

Zinc.—We quote prices of American Zinc, dry, 10c., currency; French, 11½, currency; Sheet Zinc, 12½@12¾c., currency. Duty on Metallic Zinc, pig or block, 1c. per 100 lbs.; Sheet, 2½ per lb.

Metallic Nickel.—$1.75@2.00 per lb., cubes.

Metallic Bismuth.—$8.00@$9.00 per lb., cubes.

Manganese, for Steel manufacturers, 5½c. per lb, powdered, and 5c per lb. in lumps.

The English market is dull at £68 for Chili Bars.

Tin is steady with sales of 406 to 500 slabs. Straits at 23½@23¾.

Rosin.—Sales of 300 slabs, at 27@27½ gold; English, at 23½.

Spelter is steady at 6¼ to 6½, gold

Lead in good demand from consumers. Sales of the week were from 400 to 500 tons ordinary foreign; at 6¼@6½. gold.

Antimony.—18½ to 14 and 15, gold, easier.

THE IRON TRADE.

New York, October 16, 1868.

The market for American Iron remains quiet and with but little inquiry. No. 1 Iron, of approved brands, is extremely scarce, and we have but few sales to report. 200 tons Allentown for December—delivery at $43.00; 700 November—delivery on private terms.

Grey Forge Iron is in more request, and with small supply prices are firmer. We quote 500 tons on private terms; 200 tons at $34.00 for immediate delivery.

Scotch Iron is somewhat firmer, and holders are anticipating higher prices, with 2000 tons of Glengarnock now here at dock prices have favored buyers. Sales of Glengarnock have been made of about 800 or 1000 tons at about $30.00, gold. Other brands $42.00@45.00, from yard.

Scrap Iron. Sales have been made of 1000 tons, delivered at works, at $45.00; 1,600 tons to arrive here and at Boston, on private terms; 100 tons Old Boiler plates, private terms.

Old Rails remain quiet with no sales of importance.

Bar from store is less active, but prices are steady—we heard of no invoice sales.

Boston, October 14, 1868.

There continues to be a good feeling for Pig Iron, with small stocks and a moderate demand, but the decline in gold has a tendency to reduce quotations. The sales have been at $42@45 per ton for Gartsherrie and other brands, in lots to the trade, and large lots at lower figures.

American Pig has been selling at $40@$45 per ton.

In Bar Iron there is no change, with small sales for consumption at full prices.

In Russia Sheet Iron, nothing has been done, and prices are nominally 13@14c per lb, gold.

Stocks are light for the season, and full prices are looked for as soon as the trade begins to purchase.

Imports of Pig Iron from January 1 to Octber 10, 1868:

	1868.	1867.
From Great Britain, tons	18,371	27,171
Coastwise Ports	10,442	7,352

Philadelphia, October 13, 1868.

Pig metal is held firmly, and there is rather more activity. Sales of No 1 Foundry at $42@$43, and No 2 at $38@$39. Scotch Pig is quiet at $44 per ton. Manufactured Iron commands $85@$89 for Bars. Blooms are quiet.

Lehigh Valley Iron Trade.

Pig Iron transported by the Lehigh Valley Railroad Co. for the week ending Oct. 10, 1868:

From	Tons.	Total.
Carbon Iron do	235	8,770
Lehigh Valley Iron Co	220	6,650
Thomas Iron do	600	22,725
Lehigh Crane Iron do	885	21,460
Allentown Iron do	840	17,895
Robert Iron do	230	8,005
Glendon Iron do	280	17,880
Other Shippers	455	16,362
Total	3,470	119,757

Lake Superior Iron Trade.

Receipts of Ore and Pig Iron at Marquette, up to and including Saturday, Oct. 10, 1868, by the Marquette and Ontonagon Railroad.

IRON ORE.

	To October 3. Prev'ly rep'ted.	For past week.	Total.	To October 10. Prev'ly rep'ted,	For past week.	Total.
Lake Superior Iron Co	81,039	2,245	83,284	83,284	2,164	85,448
Cleveland Iron M. Co	30,509	1,738	32,247	32,247	1,241	33,488
Marquette Iron Co	7,738	245	7,983	7,983	141	8,124
Washington Iron Co	22,984	1,555	24,539	24,539	644	25,183
New England Iron Co	6,965	342	7,307	7,307	400	7,707
Pitts. & Lake A. Iron Co.	20,528	1,189	21,717	21,717	...	21,777
Ore to Local Furnaces	20,062	1,308	21,370	21,370	385	21,755
Total Iron Ore, tons	208,325	9,030	212,355	212,355	6,416	218.771

PIG IRON.

Morgan Iron Co	6,230	226	6.456	6,456	262	6,718
Greenwood Iron Co	623	....	623	623	45	668
Bancroft Iron Co	3,077	141	3,218	3,218	48	3,266
Collins Iron Co	3,697	203	3,900	3,900	70	3,970
Michigan Iron Co	3,558	235	3,788	3,788	91	3,879
Total Pig Iron, tons	17,190	805	17,985	17,985	516	18,501
T l ore and pig iron, t'ns.	220,505	9,835	230,340	230,340	6,932	237,272

Imports of Foreign Iron and Steel at New York.

For the week ending Oct. 9.

	Quantity.	Value.
Railroad Iron, bars	15,425	$126.498
Hoop, tons	96	4,244
Sheet, tons	18	1,571
Pig, tons	910	12,809
Other Iron, tons	2,669	63,787
Chains and Anchors, packages	171	7,492
Tubes, packages	2,217	3,221
Nails, packages	5	218
Steel, packages	6,517	59,550
Machinery	65	3,291
Pipes	....	4,333
Anvils	175	1,961
Wire	290	1,623
Total value		$290,399

Market Prices.

New York, Oct. 16, 1868

Duty.—Bars, 1 to 1¼c. per lb.; railroad, 60c. per 100 lbs.; boiler and plate 1¼c. per lb.; sheet, band, hoop and scroll, 1¾ to 1¼c. per lb.; pig, $9 per ton polished sheet, 3c. per lb. Payable in gold.

Am. pig, fy. No 1, best,	$41 00@43 00	Street Rails at works	80 00 — —
" " 2x frdy,	36 00 39 00	Light ris. for mines &c. at works	$80 00@— —
" Grey Forge	33 00 37 00	Do. delivered here	82 50 — —
White and Mottled	31 00	STORE PRICES.	
Pure white for Cal. mar.	31 00 — —	Bar, Swedes, ord'y sizes	— — 155 00
Scotch Pig, No. I, best bd	42 50 45 00	Bar, Eng. and Am., rf'd.	— — 100 00
" " outside,	42 00 — —	Bar, Eng. & Am., com.	— — 90 00
Wt. No. 1Scrap f'm yd.	47 50	Scroll	130 00 175 00
Ex ship	46 00	Ovals and half round	125 00 155 00
Old Rails	47 00 48 00	Band	130 00 — —
R.R. Iron, For., fm Stock gold	51 50 52 50	Horse Shoe	130 00 — —
R. R. Iron For., to imp.	50 00 — —	Rods, ⅜@3-16 inch	165 00 165 00
" Amer. at wks. currency	77 00 — —	Hoop	185 00 190 00
R. R. Iron, Am., deliv'd	80 00 — —	Nail Rod, per lb	9¼ 10¼
Solid Steel rls. For., gd.	110 — —	Sheet, Rus. as'd. Nos. (gold)	12½ 13¼
Stl rails of any pattern at works, currency		Sheet, s'gle. D & T. com	5½ 6¼
		Rails, Eng., gold, ton:	51 00 52 00
		Rails, American	80 00 81 00

English, cast (2d and 1st quality) per lb	18 @23
English Spring (2d and 1st quality)	10 12¾
English Blister (2d and 1st quality)	11¼ 20
English Machinery	13¾ 16
English German (2d and 3d quality)	14 16
American Blister, " Black Diamond,"	10½ 16
American, Cast, Tool " "	19 —
American, Spring " "	10 13
American Machinery " "	— 13
American German " "	10 13

Pittsburgh, October 10, 1868.

The *Commercial* says: The market during the week was firm, with a fair demand for most descriptions. The stock of iron on the market continues light, and leading forge irons are held more firmly, owing to light supplies. For fine charcoal descriptions the demand was in the advance of the supply, with a firm market. Foundry grades remained about the same as last week. Consumers, in order to cheapen their mixtures, are using pretty freely of medium and low grade descriptions, which increased the demand, and imparted more firmness for those kinds, and the result was a firm market for all descriptions of iron.

The week's sales were small, owing to light supplies and receipts. Sales—500 tons of Hanging Rock, 500 tons Anthracite, and 260 tons bituminous coal smelted from Lake Superior ore. Total, 1350 tons against 4158 tons for the previous week—being a deficiency of 2808 tons.

HANGING ROCK CHARCOAL.

100 tons No 1 Foundry	$44 00	4 mos
100 tons No 2 Foundry	41 50	4 mos
275 tons Mill	41 00	6 mos
25 tons Foundry	44 00	6 mos

ANTHRACITE.

30 tons Chickie's Forge	39 50	cash.
20 tons Foundry	41 50	4 mos
50 tons Mill Iron	38 00	4 mos
60 tons No 3 Red Short	38 50	4 mos
50 tons Hard No 2	38 00	4 mos
100 tons White, delivered at Harrisburg	28 00	cash]
10 tons Mottled	36 00	6 mos
50 tons Gray Forge Neutral	40 00	4 mos

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORES.

75 tons Medium Gray Forge	39 50	4 mos
50 tons Medium Gray Forge	39 50	4 mos
50 tons Medium Gray Forge	40 00	4 mos
60 tons White and Mottled	38 00	4 mos
25 tons Lake Superior and Native Ore, Open Grey	42 00	4 mos

Cincinnati, October 12, 1868.

Pig.—There is an improved demand, with a firmer feeling in the market.

Hanging Rock H. B. Mill	$36	$38 per ton—90 days
Hanging Rock H. B. Foundry	38	40 per ton—90 days
Hanging Rock Cold Blast	53	.. per ton—90 days
Hanging Rock Car Wheel	55	60 per ton—90 days
Tennessee Cold Blast	40	42 per ton—90 days
Missouri	45	47 per ton—90 days
Jackson (stone coal) Foundry	38	39 per ton—90 days
Blooms	95	100 per ton—60 days

Manufactured.—Prices have advanced to figures given below:

	B.		C. C.	
Flat Bar	4	4¼	5¼	5½
Horseshoe Iron	5½	6	6½	7¼
Heavy Band	4½	5	6	6½
Round and Square	4	8	5½	9½
Saddle tree	5½	6	6½	7½
Hoop and Light Band	5½	9½	6½	11
Oval Iron	4½	5½	5½	6½
Half Oval and Half Round	4½	5½	6	6½
Angle Iron	5½	6½	6½	7½
T and Hollow Rail Iron	6	..	7½	..
Saw-mill Track	6	..	7½	..
Sheet Iron, 10 to 17	5½	..	8½	..
Sheet Iron, 27	6½	..	9½	..
Boiler-Plate, 3-16 to 5-16	..	..	7	..

Ironton, Ohio, October 8, 1868.

According to the *Register*, increased animation appears in the metal market, which makes the prices very firm. Holders find no difficulty now in disposing of their metal at quoted rates. We quote:

Mill, hot blast	$36 00@37 00
Foundry, hot blast	38 00@39 00
Cold blast	55 00@60 00
Bituminous forge (Belfont)	....@37 00

The demand for bar has become quite good. Rates 4c. Orders for hoop and the smaller sizes of bar are plentiful. We have as yet ascertained no well-grounded indications that the Ironton Rolling Mill go into operation this fall.

Nails are in fair request at $5 for 10d. The factory is now running its fullest capacity.

Howard Furnace Co. had 200 tons of metal on the Silver Cloud, which sunk at Bellaire last Monday. Metal insured.

The Ironton Foundry continues to turn out a large number of stoves daily, for which a good demand exists.

San Francisco, Sept. 22, 1868.

The general market in metals is dull and depressed, by reason of excessive stocks. Pig Iron is lower; sales of 250 tons Scotch and English have been made in lots at $33@$34. We also note sales of 600 sheets Corrugated Iron, ex ship, private—quoted at 8@9c.

Scotch & Eng. Pig, ton	33 00@	....	Plate No 5 to 0	4 @		4¼
American White Pig	33 00	....	Sheet, 10 to 13	4¼		5
R'd bar, bad assm't ₱ lb	2¼	3 00	Sheet, 14 to 20	4		5¼
R'd bar, good ass't ₱ lb	3¼	4 00	Sheet. 24 to 27	5		5½
Boiler, 1 to 4	4 00	4¼				

New York Imports of Metals, etc.

The following will show the imports of metals and metal goods (other than iron, which we publish elsewhere) at this port, for the week ending and including October 9,

	Quantity.	Value.
Metals, &c.:		
Brass goods	10	$1,706
Bronzes	37	5,974
Copper		78
Gas Fixtures	4	115
Lead, pigs	13,402	69,295
Metal goods	180	17,477
Needles	18	10,273
Old metal		436
Platedware	12	2,631
Per. cap	7	1,551
Saddlery	8	2,457
Spelter	54,131	2,348
Tin boxes	15,285	98,383
Tin slabs, 772 lbs	700	5,120
Zinc, lbs	55,478	3,168

London, Eng., Sept. 25, 1868.

Iron.	Per ton.	
Bars, Welsh, in London	£6 10 0	£6 12 6
Bars, Welsh, to arrive	6 10 0	.. ..
Nail Rods	6 15 0	7 0 0
Nail rods, Staffordshire, in London	7 10 0	8 10 0
Bars, in London	7 10 0	9 10 0
Hoops, in London	8 2 6	9 15 0
Sheets, single	9 2 6	11 0 0
Pig, No 1, in Wales	3 15 0	4 5 0
Refined metal, in Wales	4 0 0	5 0 0
Bars, common, in Wales	6 0 0	.. ..
Bars, Merchant, Tyne, or Tees	6 10 0	.. ..
Bars, railway, in Wales	6 0 0	6 0 0
Bars, Swede, in London	9 17 6	10 0 0
To arrive	10 0 0	10 0 0
Pig, No 1, in Clyde	2 14 3	2 18 3
Pig, f o b in Tyne or Tees	2 9 6	.. ..
Pig, Nos 3, 4, f o b in Tyne or Tees	2 6 6	2 7 0
Railway Chairs	5 10 0	5 15 0
Railway Spikes	11 0 0	12 0 0
Indian Charcoal Pigs, in London	7 0 0	7 10 0
Steel.		
Swede, in kegs (rolled)	14 5 0	.. ..
Swede, in kegs (hammered)	15 0 0	15 10 0
Swede, in fagots	16 0 0	.. ..
English spring	17 0 0	23 0 0

THE COAL TRADE.

New York, October 16, 1868.

The situation of the market this week may be fully expressed by the laconic phrase, "Brisk and bare," with a tendency towards higher prices. The coal region is all astir, and should the cold weather set in the demand would exceed the supply. We learn that an advance has been given of fifteen cents per car, and fifty cents per wagon.

In regard to freights and shipping there is no change from our report of last week.

From Boston we learn that the market is firm for all descriptions, though the demand is chiefly confined to lots for domestic and manufacturing purposes. Anthracite is in moderate demand at present at extreme prices, and both dealers and consumers are operating from hand to mouth.

The Philadelphia market for Anthracite is very unsettled, with buyers and sellers apart. The current production and deliveries at tide water are very large. But holders are mostly firm in view of the enhanced cost of production and advanced tolls, as well as the high prices lately realized for Scranton in New York.

At Baltimore the tone of the market is firm and tending upward. No stock on hand, and most dealers over sold at lower prices.

There appears to be some difficulty with Eastern buyers on account of the exorbitant freight charges demanded by coal vessels. But the supply of tonnage in this coastwise business will soon be largely increased, and with a probable decline in freights the cost of coal laid down here will doubtless be correspondingly reduced.

Among the improvements from the coal region we learn that the L. C. & N. Co. are about to erect a first-class coal-breaker at Nesquehoning.

Boston, October 14, 1868.

English Cannel has been in fair demand at $17@$19 per ton for large and small lots. In Pictou and Sydney there have been Cargo sales at $8.50 per ton. Cumberland has been selling at $8 per ton. Anthracite is firm, as accounting for the high cost, and sales are at $10 per ton for retail lots, and $8.50@$9 per ton on the nominal cargo prices.

Philadelphia, October 13, 1868.

There is rather more doing, and prices are well maintained.

The following table exhibits the amount of Coal that was passed over the various routes of transportation from the Pennsylvania Coal districts for the week ending Oct. 10, 1868, and for the season to that date. A comparison is also made with the amounts transported the corresponding week in 1867, showing the increase or decrease, as the case may be:

	1867.		1868.		INC. OR DEC.	
COMPANIES.	WEEK.	TOTAL.	WEEK.	TOTAL.	WEEK.	YEAR.
Phil. & Read. R. R.	81,352	2,573,807	109,271	2,398,453	i 27,919	d 175,354
Schuylkill Canal	32,130	764,011	24,298	718,871	d 7,832	d 50,140
Lehigh Valley R. R	40,755	1,616,564	53.470	1,849,307	i 12,715	i 232,743
Lehigh & Sus. R. R	9,439	394,804	17,358	350,858	i 7,920	d 23,964
Lehigh Canal	43,110	739,351	35,636	681,412	i 2,525	d 47,939
Scranton North	14,599	365,773	17,303	458,764	i 2,704	i 99,991
Scranton South	22,552	993,509	18,972	854,137	d 3,580	d 134,372
Penn. Coal Co. rail.	18,920	646,412	20,836	716,661	i 1,916	i 76,249
Penn. Coal Co. canal	1995	18,331	595	23,669	d 400	i 5,338
Del. & Hud'n Canal	39,556	1,078,450	50,500	1,260,434	i 10,944	i 181,981
Shamokin	8,942	32,027	12,505	385,631	i 3,563	i 18,604
Trevorton	1,887	34,773	1,491	25,207	i 104	d 9,566
Short Mountain	3,031	59,395	3,951	92,207	i 920	i 32,812
Lykens Valley Co.	2,867	58,868	2,045	64,042	d 322	i 10,174
Hunt'g'n & B'd T'p	4,916	184,650	6,494	207,274	i 578	i 22 624
Wyoming South	14,278	274,809	13,593	250,493	d 685	d 23,816
Wyoming North	....	35,197	4,314	60,316	....	i 25,119
Williamstown Col.	8,912	91,774	5,589	139,304	i 1,677	i 47,530
Total	342,241	10,297,005	398,230	10,542,040		
			342,241	10,297,005		
Increase			i 55,989	i 245,035		

Schuylkill Coal Trade.

BY RAILROAD AND CANAL, FOR WEEK ENDING, OCT. 16, 1868.

	RAILROAD.	CANAL.
St. Clair	43.741	....
Port Carbon	8,944	10,427
Pottsville	2,498	1,992
Schuylkill Haven	29,666	18,166
Auburn	4,152	....
Port Clinton	7,861	1,294
Company's use	2,409	....
Total for week	109,271	31,879
Previously this year	2,289,182	718,871
Total	2,398,453	945,750
Same time last year	2,573,807	796,141
Increase	175,354	....

Report of Coal Transported over Lehigh Valley Railroad

For the week ending October 10, 1868, and previously this season:

WHERE SHIPPED FROM.	WEEK. Tons. Cwt.	TOTAL. Tons. Cwt.
WYOMING REGION.		
Franklin Coal Co	1,544 11	25,065 08
Audenried	....	50 06
Lehigh and Susquehanna	....	....
Germania Co	....	5,825 11
Wilkesbarre Coal & Iron Co	....	15,943 19
Warrior Run	210 11	10,921 06
Parrish & Thomas	270 17	42,868 15
New Jersey	506 11	16,380 12
Union Coal Co	....	2,432 11
Wyoming Coal & Transportation Co	291 17	7,526 14
Newport Coal Co	....	....
Morris & Essex Mutual Coal Co	....	1,428 11
Consumers	....	....
Everhart Coal Co	....	....
Plymouth Coal Co	....	152 14
Hillman & Son	415 11	11,832 14
Bowkley, P & Co	....	149 08
Mineral Spring	1,070 08	23,064 08
Valley Coal Co	....	....
Enterprise Colliery	964 04	28,228 09
Linderman & Co	....	....
Washington Coal Co	....	....
West Pittston	....	197 05
Barclay Coal Co	....	....
Shawnee	279 08	7,112 14
Consumers Coal Co	286 11	3,725 06
Harvey & Bro	....	2,408 00
Wyoming Valley	286 12	5,924 01
Henry Colliery	....	1,449 01
New England	545 01	9,351 01
Delaware & Hudson Coal Co	42 02	156 18
Maltby Colliery	245 08	2,336 11
Gaylord Colliery	....	1,039 04
Chauncey Colliery	408 14	3,424 06
Ravine Colliery, P & E	....	1,062 18
Butler, H S M	....	238 17
Maryland Anthracite	49 13	2,823 15
Morgan Colliery	286 14	1,155 13
Tompkins	86 07	799 01
Rough & Ready	182 14	497 08
Rock Tunnel	110 09	346 01
Other Shippers	....	29 06
Total Wyoming	8,084 03	235,898 07
B. M. REGION.		
New York & Lehigh	1,959 13	56,315 10
Honey Brook	2,002 06	88,506 00
German Pa. Coal Co	1,554 13	44,214 12
Spring Mountain	4,035 00	101,358 16
Coleraine	2,019 13	59,404 12
B Meadow D W	43 07	1,254 04
John Connery	....	....
Lehigh Zinc Co	....	....
Spring Brook	....	....
Other Shippers	10 16	393 07
Total B M Region	11,625 08	351,447 01
HAZLETON REGION.		
Central Coal Co	....	....
Ashburton Co	....	433 15
Mount Pleasant	225 17	9,712 13
Hazleton	5,313 00	213,914 14
East Sugar Loaf	4,312 08	143,969 19
Mount Hall	....	219 14
Latimer (A Pardee, Jr., Bro & Co.)	1,450 07	42,139 06
Stout Coal Co	750 03	28,798 04
Harleigh	1,413 10	47,718 04
Evervale Coal Co	1,724 14	63,023 01
Jeddo, (G B M & Co)	1,530 19	107,758 03
Woodside, J C Co	157 07	12,926 18
Highland Coal Co	710 18	41,480 02
Cross Creek	422 01	21,523 17
Council Ridge	1,270 00	74,147 06
Buck Mountain	1,641 00	50,400 13
Other Shippers	....	....
Total Hazleton	20,921 19	858,166 09
UPPER LEHIGH REGION.		
Upper Lehigh Coal Co	404 15	35,414 05
MAHANOY REGION.		
Mt Rose Coal Co	210 10	3,393 00
Mount Etna	....	3,735 06
Mahanoy Colliery	829 01	20,390 18
Coplay Colliery	1,593 07	27,487 15
Glendon Colliery	1,086 15	20,757 05
Primrose Colliery	1,109 15	16,378 09
E S Silliman	1,740 14	65,819 02
McNeal Co	2,622 05	70,645 09
Knickerbocker	1,011 16	42,979 03
Thomas Coal Co	....	20,423 10
Howard Edmonds	279 15	8,798 04
New Boston Coal Company	1,266 09	37,745 02
Shamokin Coal Company	....	....
Caledonia M & M	367 13	18,353 11
Coal Mountain	384 13	1,438 15
Coal from Catawissa Railroad	....	....
Other Shippers	20 17	36 10
Total Mahanoy	12,433 10	368,381 10

TOTALS.	WEEK. Tons. Cwt.	PREVIOUSLY Tons. Cwt.	TOTAL. Tons. Cwt.
Total Mahanoy	12,433 10	355,948 00	368,381 10
Total Hazleton	20,921 19	837,244 10	858,166 09
Total U. Lehigh	404 15	35,009 10	35,414 05
Total B. Meadow	11,625 08	339,821 13	351,447 01
Total Wyoming	8,084 03	227,814 04	235,898 07
Grand total	53,469 15	1,795,837 17	1,849,307 12
Same time last year	40,755 03	1,575,809 01	1,616,564 04
Increase	12,714 12	220,028 16	232,743 08
Decrease	....	....	....
Forwarded east from M. Chunk by r'l	53,469 15	1,795,837 17	1,849,307 12
Delivered at M. C'k and on line of r'd above that point	4,886 00	41,884 09	46,770 09
At Penn Haven for shipm't by canal	8,801 12	129,691 18	138,493 10
At M. Chunk for shipment by canal	5,950 14	75,726 14	81,677 08
Total by rail and canal	73,108 01	2,043,140 18	2,116,248 19
Same time last year	46,309 04	1,664,078 01	1,710,387 05
Increase	26,798 17	379,062 17	405,861 14
Decrease	....	....	....

Cumberland Coal Trade.

By B. & O. Railroad.—The shipments over the Baltimore and Ohio Railroad, for the week ending Oct. 10, were as follows:

From Cumberland and Pa. Railroad, via Cumberland	
Consolidation Company	3,046 07
Borden	2,344 00
Midland	418 09
Allegany	68 02
From Eckhart RR.	
C. & I. Co.	3,127 13
Total	8,999 11

From George's Creek, via Piedmont.

George's C. & I Company	1,298 09
Central	4,093 10
Atlantic	257 19
Savage Mt	92 07
Franklin	251 10
Piedmont	1,542 19
Swanton	565 18
Potomac	1,609 12
Hampshire	2,751 17
American	880 05
Barton	146 07
Total	15,490 13

By C. & O. Canal.—There were despatched from this port, during last week, 16,974.03 tons of Coal, forwarded by the following companies:

American	2,593 19
Borden	1,217 08
Central	2,578 09
Consolidation	2,666 05
C. & I. Co.	1,496 16
H. & B.	1,730 03
National	221 14
Total	12,505 14

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

At New York, Oct. 16, 1868.

Schuylkill R. A., choice	$8 00	$....	Schuylkill Chestnut	$6 50	....
" Ordinary	7 75	....	Lehigh W.A.L'p old Co.	7 75	....
" W. A. Lump	6 50	....	" Broken	7 25	....
" Steamboat	6 75	....	" Egg	7 25	....
" Broken	7 25	....	" Stove	7 50	....
" Egg	7 75	....	" Chestnut	7 50	....
" Stove	7 75	....	Shamokin	7 50	....

SPECIAL COALS.—Dealers' Quotations.

Diam'd Vein R.A., Sch'kill	8 00	....	Old Co.'s W. A. Lehigh	7 50	6 50
Locust Dale W. A., "	7 75	....	Mt. Pleasant	7 50	....
Honey Brook " Lehigh	7 75	7 50	Mountain	7 50	7 75
Harleigh " "	7 25	7 50	Buck Ridge W.A.,Sh'kin.	7 50	....
Spring M'n " "	6 50	7 50	H. Heils, E. F'klin, Lorb.	8 00	....
Sugar Creek " "	....	7 50	New England Red Ash	7 00	7 50
Ashburton " "	....	....	Wyoming	7 00	....

Dealers in these Coals may be found in our advertising columns.

At Philadelphia, Oct. 16, 1868.

Lehigh L'p and St'mb't	5 50	....	Henry Clay, Egg & St	....	4 50
" Broken and Egg	5 50	....	Locust Mount Lump	4 25	4 50
" Stove	6 00	....	" Steamboat	4 50	4 75
" Chestnut	4 75	....	" Broken	4 50	4 75
Schuylkill R. A	5 25	5 50	" Egg	4 50	4 75
" Chestnut	4 00	4 25	" Stove	5 00	5 25
" W. A. Lump	4 25	4 50	Lorberry Coal	5 00	....
" Broken	4 50	4 75	Shamokin	....	....
" Egg and Stove	4 50	4 75	Franklin, (Lykens Val.)	5 50	....
" Chestnut	4 00	4 25	Broad Top	5 00	....
Hill & Harris, Egg & St	....	4 80			

Scranton Coal at Elizabethport, Oct. 16, 1868.

(Corrected weekly by D. L. & W. R. R. Co.

Lump	5 25	....	Egg	7 00	....
Steamer	6 00	....	Stove	7 25	....
Grate	6 50	....	Chestnut	6 25	....

Prices for Pittston Coal at Newburgh, Oct. 16, 1868.

(Corrected weekly by Penna. Coal Co.)

Lump, per ton, 2240 lbs.	....	....	Egg " "	....	....
Steamer, " "	....	....	Stove " "	....	....
Grate " "	....	....	Chestnut " "	....	....
Pea " "	....	....			

70 cents additional to New York.

Lackawanna at Rondout, Oct. 16, 1868.

Lump	5 25	....	Egg	6 25	....
Steamer	5 50	....	Stove	6 50	....
Grate	5 75	....	Chestnut	5 25	....

65 cents additional to New York.

Lehigh Coal at Elizabethport, Oct. 16, 1868.

Lump	7 50	....	Chestnut	6 50	....
Steamboat and Broken	7 25	....	Stove	7 50	....
Egg	7 25	....			

Wilkesbarre Coal at Hoboken, Oct. 16, 1868.

(Corrected by Wilkesbarre Coal & Iron Co.)

Lump	6 50	....	Egg	7 00	....
Steamer	7 00	....	Stove	7 25	....
Broken	7 00	....	Chestnut	6 25	....

At Baltimore, Oct. 16, 1868.

Wholesale prices to trade.			Trevorton R. A	$ 600	625
Wilkesbarre by cargo or car load	$6 50	@6 75	By retail, per ton of 2,240 lbs., delivered	8 00	8 50
Pittston and Plymouth	6 40	6 60	Georges C'k & Cumberland f. o. b. at Locust Point for shipping	4 90	5 00
Shamokin R., or W. Ash	6 50	6 75			
Lykens Valley, R. A	6 30	6 50			

At Havre de Grace, Md.

Cargo prices for shipment *south* of Patapsco River, (drawback allowed of 21c.)			Shamokin R. or W. Ash	$6 85	@ 700
			Lykens Valley R. A	....	700
			Trevorton R. A	6 50	6 75
Wilkesbarre and Pittston W. Ash	$6 75	@....			

At Georgetown, D. C. and Alexandria, Va.

George's Creek and Cumberland f. o. b. ..... 4 55 @4 75

An advance of twenty cents per ton has recently been allowed boatmen on canal freights from Cumberland, and the price of coal correspondingly advanced.

Prices of Gas Coals.

[October 16, 1868.

PROVINCIAL. Duty, $1 25	Coarse. Gold.	Slack. Gold.	AMERICAN.	Coarse. Currency.	Slack. Currency.
Block House	$1 75 @$	75	Westmoreland Co	$8 50	$8 00
Gowrie	1 75	75	Despard Coal Co	8 25	8 00
Lingan	1 75	75	Penn	8 50	8 00
Sydney	2 13½	71½	Newburgh Orrel Gas	8 50	8 00
Pictou	2 13½	1 18½	Delivered in New York.		
Little Glace Bay	1 75	1 00			
Caledonia	1 60	75			

Prices of Foreign Coals.

Duty, $1 25 per ton.

Corrected weekly by Parmelee Bros., 32 Pine Street, N. Y.

Liverpool Gas Caking	$ 9 50	Liverpool House Cannel	18 00 19 00
" " Cannel	14 00	" " Orrel.	16 00 18 00

Per ton 2240 lbs., Ex. ship.

PRICES FROM YARD.

Liverp'l House Orrel, scr'd	$18@20	Liverp'l House Can'l, scr'd	$22 00 ..

Per ton 2000 lb., delivered.

Coal Freights.

(Corrected Weekly).

Rates of Freight from Newburgh.

RIVER.		EASTERN.	
On "Pittston" Coal, by boats and barges of the Pennsylvania Coal Co., per ton of 2,240 lbs.		Stamford	$1 60
Troy and West Troy	$ 55	Norwalk	1 60
Albany and Greenbush	50	Bridgeport	1 60
Coeymans	45	New Haven	1 60
Coxsackie and Stuyvesant	40	New London	1 80
Hudson and Catskill	35	Norwich	1 90
Saugerties and Barrytown	35	Mystic	1 85
Rhinebeck and Rondout	30	Stonington	1 85
Po'keepsie and New Paltz Land.	25	Sag Harbor	1 85
Fishkill Landing	20	Bristol	1 95
Cold Spring and West Point	30	Newport	1 95
Peekskill	40	Fall River	1 95
Haverstraw	45	Providence	2 00
Sing Sing and Nyack	50	Dighton	2 00
Tarrytown and Piermont	50	Warren	2 00
Yonkers	55	Pawtucket	2 20
The coal must be discharged with all reasonable dispatch, at the expense of the consignee, who shall also pay wharfage on the boat. Boatmen will tend guy while unloading.		New Bedford	2 10
		Boston	2 15
		East Cambridge	3 10
		Salem	3 00
		Newburyport	3 10
		Portsmouth	3 10
		Portland	2 90

Freights on Coal Sea-borne from Port Richmond, Philadelphia.

Sept. 30, 1868.—From Philadelphia and Reading R. R. Wharves, Phila., to

Boston	$3 30	@3 40	Dover	— —	@3 55
Providence	2 75	2 95	Cohasset Narrows	— —	3 40
Lynn	3 30	3 45	Cambridgeport	— —	4 00
Portland	3 30	3 40	Dorchester	— —	3 30
Fall River	— —	2 75	Fair Haven	— —	2 75
New Bedford	2 50	2 75	Gloucester	3 40	3 50
Salem	3 25	3 40	Lawrence	— —	3 40
Newport	— —	2 75	Old Cambridge	— —	3 80
East Cambridge	— —	3 30	Saco	— —	4 10
Newberryport	— —	3 60	Roxbury	— —	3 55
Portsmouth	3 25	3 55	Salisbury	— —	3 80
Charleston	— —	2 00	Greenport	— —	2 75
Danversport	3 30	3 40	Norwich	— —	2 75
Bangor	3 33	3 35	New London	— —	2 70
Amesbury Point	— —	3 75	Harlem	— —	1 45
Beverly	— —	3 30	New Rochelle	1 30	1 40
Charlestown	3 30	3 35	Sag Harbor	— —	2 75
Hingham	3 35	3 40	Spuyten Duyvel	— —	1 40
Marblehead	3 30	3 35	Williamsburg	— —	1 35
Nantucket	— —	3 30	Jersey City	— —	1 40
Plymouth	— —	3 35	New Brunswick	— —	1 20
Provincetown	— —	3 50	Alexandria	— —	1 80
Washington	— —	1 50	Fredericksburg	— —	2 20
Calais	— —	3 30	Wilmington, Del	— —	1 00
Machiasport	— —	3 30			

[From Elizabethport and Port Johnson.

Albany	$1 10	@— —	New London	$1 45	— —
Boston	2 75	— —	Newport	1 75	— —
Bridgeport	1 25	— —	New York	65	— —
Fall River	1 75	— —	Norwalk	1 25	— —
Hartford	2 00	— —	Norwich	1 65	— —
Hudson	1 10	— —	Pawtucket and towing	1 85	— —
Wareham	2 20	— —	Portland	2 75	
Middletown	1 85	— —	Portsmouth	3 00	
New Bedford	1 80	— —	Providence	1 75	— —
Newburyport	3 00	— —	Salem	2 50	— —
New Haven	1 25	— —	Augusta	3 25	— —

Provincial Freights.

TO NEW YORK.		TO BOSTON.	
Sydney	$3 50	Sydney	$2 75
Lingan	....	Lingan	2 25
Cow Bay	4 50	Cow Bay	....
Port Calidonia	4 25	Port Calidonia	3 00
Little Glace Bay	4 00	Little Glace Bay	2 75

Foreign Freights.

New Castle and Ports on Tyne	£13@£15 keel.		
Liverpool	12s. 6d.@15s. ton.		
Australian	9 50@10 00	Lehigh	15 50@16 00
do. Wallsend	10 00 10 50	Liverpool	13 00 ....
Bellingham Bay	11 00	Pittston, ton	14 50 15 00
California	7 00 9 00	Scranton	14 00 15 00
Cumberland cks	30 00 32 00	Scotch	13 00 ....
do bulk	28 00	Vancouver Island	12 50 ....
Chili	10 00		

Rates of Transportation to Tide Water.

[BY RAILROAD.]

To Port Richmond, Philadelphia.

Philadelphia and Reading Railroad, from Schuylkill Haven $2 00

The following are the drawbacks allowed on all coal shipped East of New Brunswick and South of Cape Henry, until further notice.

	Drawback.	Freight.	Nett.
Lump	60	$2 00	$1 10
Steamboat	60	2 00	1 40
Broken	25	2 00	1 75
Egg	25	2 00	1 75
Stove	25	2 00	2 00
Chestnut	15	2 00	1 85

From Port Carbon, 8 cents per ton more.

To Elizabeth.

L. V. Railroad from Mauch Chunk to Easton	$ 92
C. R. R., N. J., Easton to Elizabethport	1 38
	2 30
Shipping Expenses at Elizabethport	25
Total	2 55

To Port Johnson.

L. V. R R	$ 92
C. R. R. of N. J	1 46
Shipping Expenses	25
Total	2 63

To Hoboken.

L. V. R.R	92
Morris & Essex R.R	1 46
Shipping Expenses	25
Total	$2 63

To Philadelphia.

[BY CANAL.]

From Schuylkill Haven to Port Richmond	$1 00
Freights and tolls by Raritan Canal	2 25
	3 25
No Drawback	
Total	3 25

To New York.

From Mauch Chunk to New Brunswick, by Lehigh, Del. Div. and Del. & Raritan Canal	$1 29
Freights through	1 45
Towage	20
	2 94

To New York via Morris Canal.

Lehig Canal	$ 44
Morris "	65
Towage	10
Freight	1 75
Total	2 94

Expenses from Mauch Chunck to Jersey City for Re-shipment.

Lehigh tolls (net)	$ 49
Morris "	49
Freight	1 65
Re-shipping	30
Total	2 93

The San Francisco Coal Trade.

[From the San Francisco *Commercial Herald*, Sept. 22, 1868.]

The liberal supply of California Bituminous from the Mount Diablo mines is having its legitimate effect upon the general market, supplying as it does a very considerable portion of the Steam Coals now in use. At this date Anthracite and Cumberland are in light supply, and prices favor the seller. We have no sales to report. Stocks of English Steam are liberal, and held above the market. The land and water carriage required to lay Mount Diable Coal down in this city is 56 miles—6 miles of land carriage and 50 miles by water. The yield of the mines at the present rate of working range from 20,000 tons to 24,000 tons per month, or 250,000 tons per annum. The screenings of this coal are now laid down on the wharves of this city in cargoes, for manufacturers' use, at $5 per ton. As the freight averages about $1 per ton, screenings can be delivered at the interior landings in cargoes at $4 per ton. Coal for steam purposes never was so cheap here as now; and is even lower than coal, for the same uses, can be had in the larger Atlantic cities. It is true we cannot do everything with Mount Diablo Coal; but its possible uses are greater chan many have supposed. At the Selby Lead Ore Smelting works, near North Point, the screenings of this Coal are not only laid down at the low price of $5 per ton, but it is used extensively for smelting rebellitous ores. For all local steam purposes it is the most desirable fuel at present prices of $7@$9. The river steamboats use this coal, and we believe some of the outside steamers. There is too much sulphur in it to make it safe to carry on long voyages; and for this reason it has not been much used for culinary purposes. But it is found that in stoves with a strong draft and specially constructed, it can be used with convenience and economy. One of the editors of the *Bulletin* has been making a tour of the Mount Diablo Coal mines. He gives the number of mines working as four, and states the average monthly yield to be as follows: Black Diamond, 5,000 tons; Pittsburg, 2,000 tons; Union, 2,000 tons; Eureka, 1,500 tons. Total monthly yield, 11,500 tons.

Prices range:

Australian	10 00@10 50	Lehigh	15 50@ ....
do. Wallsend	9 75 10 00	Liverpool	12 50 ....
Bellingham Bay	11 00	Pittston, ton	.... 15 00
California	7 00 9 00	Scranton	.... 15 00
Cumberland cks	30 00	Scotch	12 50 ....
do bulk	28 00	Vancouver Island	12 50 ....
Chili	9 50		

Imports from January 1st to September 16th, 1868:

Anthracite, tons	19,182	English, tons	17,872
Australian, tons	16,278	Lehigh, tons	5,130
Bellingham Bay, tons	5,680	Mount Diablo, tons	68,989
Ctmberland, cke	2,623	Nanaimo, tons	19,988
Chili, tons	7,373	Saghallen, tons	204
Coos Bay, tons	8,384		

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T. P. Pemberton is Corresponding and Traveling Editor.

W. B. Harrison is Editor of the Mechanical Department.

☞ Correspondents, exchanges and others addressing us should be *extremely careful* to write "Journal of Mining," instead of "Mining Journal," and to give the number of our Box at the Post Office, which is 5969, to ensure safe carriage. Communications intended for publication should be plainly written, and on one side of the paper only.

NEW YORK, SATURDAY, OCTOBER 17, 1868.

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CALCULATION OF THE UNITS OF POWER PRODUCED BY THE CONVERSION OF WATER INTO STEAM.

The most common way, and at the present stage of our knowledge almost the only way, of converting heat into motion is through the medium of steam. As the increase in volume of a given quantity of water when converted into steam, and also the amount of heat necessary to accomplish this conversion are well known, it is quite easy to calculate the mechanical power produced by the fuel, when this method of conversion has been adopted.

In order to deduce from the above mentioned well-known principles the mechanical power of steam, we will suppose that we have a long vertical tube, open at one end, of about 6 inches in diameter, or 27 square inches area of horizontal section. Let the length of the whole tube be 144 feet or 1,728 inches, then the contents of its volume will be $27 \times 1{,}728$ cubic inches, or 27 cubic feet. Suppose now we have at the bottom of this tube water to the height of one inch, then the bulk of this water will be 27 cubic inches or very nearly one pound. Let us, finally, assume that we furnish this water and the whole tube with heat enough to convert the water into steam. With the knowledge of the following data our calculation becomes easy:

1st.—Water, when converted into steam, 212° Fahr. will have increased its volume about 1,700 times, and the steam will exert a pressure of one atmosphere, or 15 pounds to the square inch.

Since, therefore, one cubic foot is equal to 1,728 cubic inches, it is a common remark that every cubic inch of water produces one cubic foot of steam. This universally accepted rule is, however, very incorrect, from the fact that it is only applicable to steam of 212°, a pressure just counterbalancing that of the atmosphere, and not commonly used in steam-engines. At higher temperatures and pressures the expansion is much less, as will appear from the following facts, established by experiment.

2d.—Water, when converted into steam at 250° Fahr., will have increased its volume 900 times, and the steam will exert a pressure of two atmospheres, or 30 pounds to the square inch.

3d.—Water, when converted into steam at 293° Fahr., will have increased its volume 475 times and the steam will exert a pressure of four atmospheres, or 60 pounds to the square inch.

4th.—Water, when converted into steam at 340° Fahr., will have increased its volume 250 times, and the steam will exert a pressure of eight atmospheres or 120 pounds to the square inch.

It is scarcely necessary to remark that the heating of water to a temperature of more than 212° Fahr., and the consequent development of steam of a higher tension than the atmospheric pressure, can only be accomplished in strong, closed vessels.

5th.—To convert one pound of water into steam of 212° Fahr. requires 1,000 units of heat (see page 168), which heat may be produced by the combustion of one fourteenth of a pound of coal (see page 185).

6th.—To convert one pound of water into steam at 250° Fahr. requires not 36 units more of heat, but only 11, as the specific heat of steam is less than one-third that of water. (See explanation of specfic heat, page 72).

7th.—In the same manner, to convert water into steam at 293° Fahr., or four atmospheres of pressure, requires an addition of twelve and one-half units of heat, and to convert it into steam at 340° Fahr., or eight atmospheres of pressure, requires another addition of fourteen units of heat.

It will be seen that for every additional atmospheric pressure it is necessary to produce a less amount of sensible heat, and also that the capacity of the steam for specific heat decreases when the temperature increases; so that the same addition of heat has more effect, when applied after a high temperature and pressure have already been obtained, than at a low temperature and pressure.

The above data have been determined in the most rigorous manner by Regnault, and the first one mentioned shows that the 27 cubic inches of water, we are supposed to have in the tube, will, upon converting them into steam at 212° Fahr., expand into 27 cubic feet of steam, and thus fill the whole tube; that is, if we submit the steam to no other pressure than that of the atmosphere, viz: 15 pounds to the square inch.

A piston without weight, or counterbalanced with a weight, moving steam-tight and without friction in this tube, and resting on the surface of the pound of water at the bottom of the tube, would then during its evaporation or conversion into steam, be lifted up though the distance of the whole length of the tube, 144 feet, with a power counterbalancing the atmospheric pressure upon its surface. Since the atmospheric pressure is 15 pounds to the square inch, and the surface of the tube 27 square inches, the power would be 27 times 15 pounds, or 405 pounds. This raised through a space of 144 feet, is equal to 58,320 pounds raised one foot, or 58,320 so-called foot-pounds, equal to 58,320 units of power when performed in one minute.

To measure the power of steam engines a larger unit has been adopted, viz: the horse-power (see page 72), equal to 33,000 units. By dividing the above we obtain very nearly one and four-fifths horse-power, produced by the consumption of one-fourteenth of a pound of coal per minute, or nearly four and one-half pounds per hour; corresponding to two and one-half pounds of coal per hour for every horse-power produced.

Let us now see what amount of power we obtain when we heat the water to a higher temperature and thus work at a higher pressure, than the common atmosphere. It has been shown that when we heat to 250° Fahr. we obtain double the atmospheric pressure. Our piston would then be lifted by a force of $2 \times 27 \times 15$ pounds, or 810 pounds, through a space of 900 inches, or 75 feet, producing 800×900 or 60,750 foot pounds, for 1,011 units of heat.

When we heat the water to 293° Fahr. we obtain four times the initial atmospheric pressure, $4 \times 27 \times 15$ pounds, or 1,620 pounds, and as the water in this case expands only 475 times its original bulk, it will rise to the height of as many inches or nearly 40 feet, and lift the 1,620 pounds through that distance. This is equal to 64,800 foot-pounds for 1,022 units of heat.

Finally, when we heat the water under pressure to 340° Fahr. it will expand into steam 250 times the bulk of the water, and fill the tube 250 inches, or nearly 21 feet. Its pressure will be 8 atmospheres, or $8 \times 15 \times 27$ pounds, or 3,240 pounds. This lifted 21 feet, gives 68,040 foot-pounds, for 1,038 units of heat.

To recapitulate these statements: we find that with a pressure of one atmosphere we obtain 58,320 foot-pounds for 1,000 units of heat; working with two atmospheres of pressure we obtain 60,750 foot-pounds for 1,011 units; with four atmospheres, 64,800 foot-pounds for 1,022 units; and with eight atmospheres, 68,040 foot-pounds for 1,033 units of heat employed.

It is seen that there is some advantage in higher temperature and pressures. This advantage is not, however, as great as might be anticipated, or as is supposed by the majority of people. The pressure of one atmosphere gives us 58 foot-pounds for one unit of heat, at two atmospheres we obtain 60 foot-pounds, at four atmospheres 63.5 foot-pounds, and by means of steam of eight atmospheres pressure we obtain 65.5 foot-pounds for every unit of heat employed. When now we take into consideration the fact that, practically, by means of higher temperatures, there is more loss of heat by waste of fuel, radiation, &c, it is clear that the slight advantage gained may be easily overbalanced by other disadvantages.

The conditions here assumed make it clear that the power actually obtained in any steam engine can never fully come up to the figures thus obtained; and the comparative value of different engines, may be estimated according to their approximation to this maximum, representing the greatest possible power which can be obtained, when heat is converted into motion by the intervention of steam.

We ought to remark that in practice steam, at *two* atmospheres, or 30 pounds of pressure, is called steam at one atmosphere, or 15 pounds of pressure. In this view the resistance of the atmosphere is not counted. One atmosphere of pressure may, therefore, be subtracted from our figures when we conform them to terms in common use.

As all the best steam engines are, and in the nature of the case must be, below the average of these estimates, and produce only from 30 to 50 foot-pounds per unit of heat, usually only half the here calculated amount, our former statement (page 232) is explained, viz: that they actually produce only one twentieth of the theoretical power of 700 foot-pounds for every unit of heat.

THE PACIFIC RAILROADS.

The country is looking forward with great interest to the approaching completion of the railway line across the continent. Already the beneficial effects of the new order of things are beginning to be felt in the districts which border the line of the road, and we may look forward, early next year, to the opening of steady travel and traffic. Having very recently passed over the whole length of the Central and Union Pacific Railways, we propose to devote one or two articles to the questions concerning this undertaking which are so commonly and so ignorantly discussed at the East. Even the telegrams which appear in the New-York papers, dated from St. Louis, Omaha, and Chicago, seem either to have been composed here, or to have proceeded from operators at those places who had little acquaintance with the facts. It is but a day or two since a dispatch to the Associated Press announced that the trains on the Union Pacific road were running to Black Buttes, when in point of fact we ourselves took the regular passenger train on that road, on the 17th of September, a long distance beyond Black Buttes, at Point of Rocks, 830 miles west of Omaha. Still more recently, it is announced that the grading for the Central Pacific track is ready for the iron for "a hundred miles beyond Austin," when in fact Austin is not on the line of the road at all.

The Central Pacific crosses the summit of the Sierra and follows the valley of the Truckee eastward to the point where that river turns sharply to the north, to empty itself, twenty miles distant, into Pyramid Lake. This point used to be known as the Big Bend of the Truckee, and is now the site of the town of Wadsworth. Wells, Fargo & Co.'s overland stages have for several months made Wadsworth their starting point, and run eastward 150 miles to Austin, then 400 miles to Salt Lake City, and then to the western terminus of the Union Pacific, wherever that might be. The present terminus, Point of Rocks, is 234 miles from Salt Lake, and the whole distance now travelled by stages is therefore about 784 miles. This interval has been continually shortened during the past summer from the eastern, but not at all from the western, end. The reason of this will appear upon an inspection of the map. After leaving Wadsworth, the Central Pacific passes close by Humboldt Lake, and strikes into the valley of the Humboldt, which it follows for seme two hundred miles northward, thus widely departing from the present overland mail route, and adopting instead the old emigrant road. To keep up with the shifting terminus of this line, Wells, Fargo & Co. would have been obliged to abandon Austin, or rather to put on a special connecting line to Austin, move stations and stock to the northern road, and all for the sake of shortening by a few hours the route which they are so soon, by the laying of the last rail, to lose altogether. This is a very different matter from merely dropping one after another the overland stations, and shortening, without changing, the route, as is done at the eastern end.

The mouth of Reese River valley is some 200 miles from Wadsworth by the railroad, and to this point the Central Pacific is now completed. For some time the citizens of Austin have been constructing, at their own expense, a fine wagon road through the valley, to connect with the railroad. This road runs due north, and is about 85 miles long. It brings Austin nearer by 65 miles to the railroad than the present road to Wadsworth; and the comfort and speed of the journey are greatly increased, besides, by the fact that there are no mountains to be crossed, whereas the present road is a constant alternation of alkali flats and mountain passes. The time will be reduced from thirty hours to ten, if the Austin people keep their promise and maintain a first-rate road. This they are likely to do, since they will need the road for business and travel after the overland stages have ceased to run. It is the only commercial salvation for Austin, to secure so cheap and easy a connection with the railroad as to preserve its present position as center of supplies and trade for the southern districts—a supremacy which Belmont is already inclined to repudiate.

Wells, Fargo & Co. will move their terminus to the end of Reese River Valley, and use this new road during the winter. Probably this will be the last change made, until the termini of the two roads come so near together as to render the transfer of passengers and freight merely a matter of hours. We do not look, therefore, for anything less than 485 miles of staging west of Salt Lake before next May. The terminus of the Union Pacific for this winter may be at Brian City, some 190 miles this side of Salt Lake (to which point we fancy the track must be by this time laid), or a new town may still be laid out, further west. At all events, there will probably be

about five days' staging between the roads. When we came home, in September, it was about six days' travel from Wadsworth to Point of Rocks.

Such is the present forwardness of the great enterprise. We were at the end of the Central Pacific on the 19th of August, during which day six miles and a half of track were laid along the level valley of the Humboldt; after witnessing that performance, we cannot permit ourselves to doubt the early completion of the whole line. In another article we shall answer the question, how the work is being done, and then we may venture an opinion as to the value of the first mortgage bonds of the two companies, now offered to the public, the security of the position occupied by the United States as a creditor, and, finally, the chances of the present common stock, after both these claims are satisfied.

THE "LIGNITE" OF WYOMING.

Prof. Hayden, whose report on the coal deposits of the plains has been for some time in various forms before the public, is now engaged, under a recent Act of Congress, in a survey of the new territory of Wyoming, where he has already examined newly discovered and extensive beds of coal, which he holds to be, like the beds of South Boulder and other trans-Mississippi localities, tertiary and not cretaceous, in spite of the contrary opinion of some geologists of repute. In this controversy Prof. Hayden has the advantage of an intimate acquaintance with the geology of Nebraska, Colorado and Dacotah, which he has studied in the field for years, more closely perhaps than any other man; and we naturally attach great weight to his opinion. Nor is it our object to question that opinion on the present occasion.

Speaking from a practical stand-point, however, we object to the name Lignite, applied in the discussion to these recent coals. It is a word which expresses a peculiar texture, in which the vegetable fibre has not yet disappeared; and, as such, it is calculated to give an unfavorable impression as to the quality of the coal to which it is applied. Now, in point of fact, the coal of the plains is better than any yet discovered west of Ohio and east of the Mississippi—decidedly better, for instance, than that of Illinois. It is not bituminous coal, it is not anthricite, it is not (in texture) lignite. What shall we call it?

In a recent personal interview with Prof. Hayden, in the field, we took the liberty of suggesting "Tertiary Splint Coal," as a name sufficiently precise both in a commercial and a scientific sense. We hope he will act upon our suggestion in future publications.

TELEGRAPHING BY NUMERALS.

Captains Bolton and Barron, of England, are preparing a dictionary of telegraphic signals, in which all words, and also such phrases and sentences as most frequently recur in telegraphic messages, are expressed by combinations of numerals. It is claimed that this system would greatly reduce the number of signals. For instance, the message, "Cannot come home till last train," which now requires the transmission of 65 signals, would be represented by the number 00951, consisting of only 20 signals. Special clerks would be required for the translation of the messages into and out of the cipher, and the operator himself would be free from any disturbance by involuntary thoughts upon the meaning of the despatch before him.

It is claimed that greater secrecy, as well as speed, would be the result. We do not see that there is any gain of secrecy. The translating clerks would be as liable as operators to betray trust. In point of accuracy, we think the new system inferior to the old. To take the example given above: the sentence, "Cannot come home, tell lost train," would be easily interpreted in spite of two errors, because the errors make nonsense, and the context suggests the necessary correction; but the number 00951 might be sent as 00952, and then bear the significance, "Johnny has the measles," or any other distinct and distressing piece of intelligence. The absolute number of mistakes like this might be less than those of ordinary transmission of words; but the mistakes would always make sense, and the distorted messages would tell coherent and intelligible lies. We may well leave this argument, however, to the consideration of telegraph companies, who are legally responsible for the accuracy of despatches.

THE SOUTHERN GOLD FIELD.

We publish in our mining summary a letter from an intelligent southern correspondent, who writes from York District, South Carolina, to complain that we do not pay more attention to the mining regions of Georgia, Virginia, North and South Carolina, and to suggest that we send a mining engineer through that region, to report on its resources and draw the attention of capitalists to the great inducements which it offers for the investment of capital. We think an examination of our files will exonerate us from the charge of having neglected any part of the country. There is hardly a mining enterprise in any of the States mentioned by our correspondent which has not, at one time or another, been mentioned in our columns. We shall continue to report the progress of mining industry in the South, and shall publish with pleasure the communications of any trustworthy person who may desire to make more complete the work of our regular correspondents.

ANSWERS TO CORRESPONDENTS.

W. P. B., of Wisconsin.—"A. R. B., a machinist, claims that a boiler 8 feet in diameter will carry the same pressure per square inch as one of 4 feet in diameter, of the same thickness of iron, other things being equal. T., a tanner, claims the contrary. Please decide." As the total surface of a boiler of double the diameter is 4 times larger, the total pressure on such a boiler is also 4 times greater, if the pressure per square inch is the same; consequently, a large boiler, made of the same kind of iron, is weaker, and must be made of heavier iron in order to be as strong as a smaller one, which may be made of lighter iron, in case all will have to stand the same pressure per square inch. This explains, at the same time, why tubes of very small diameter may be made of very light metal, and will withstand comparatively very great pressure. The number of square inches of their surface being small, they will withstand, for instance, steam of 600 lbs. per square inch, while a boiler made of the same thickness of iron would burst at only 60 lbs.

B. D., of Reading, Pa.—The so-called perpetual motion on exhibition in your city moves, of course, by some secret power—weights or springs, which are wound up by hand power, or water power, or running sand, or perhaps electro-magnetism, which requires a battery in which zinc is consumed, like coal under a steam boiler. The whole point of ingenuity is that the connection of the motive power with the visible wheel is so hidden that common observers cannot find it out, particularly when their attention is chiefly attracted by the visible mechanical combination, which is claimed to produce the perpetual motion. In short, all perpetual motions are humbugs.

N. L. C., of Vermont.—Lime is not found in nature in a free state. It occurs combined, principally, with carbonic, and sulphuric acid. Phosphate of lime is found chiefly in bones.

A. M. P., of Colorado.—Tin ore is almost always found accompanied with wolframite, and scheelite, a mineral resulting from the decomposition of the latter. Both are, however, generally accompanied with quartz, chlorite, mica, combinations of fluorine, molybdanite, arsenical pyrites, and also other varieties of pyrites containing arsenic. Such mineral deposits are found most frequently in crystalline rocks rich in quartz, as for instance, granite, gneiss, mica slate, etc.

A. M. L., of Minn.—The measure of the force required to drive your force pump is found by multiplying the surface of the piston in inches into the perpendicular heighth to which the water is to be raised in feet, and dividing the product by 2.25. The demonstration for this rule is, that a column of water of one inch horizontal section, and two and one-fourth feet high, weighs one pound. Therefore as many times as you have this section and this height, you will have one pound to lift. These being the only elements in the calculation, it makes no difference how wide your discharge-pipe is, provided it is wide enough; but it must not be made higher than necessary in order to just discharge the water into the tank.

C. W. T., of S. C., Apprentice in the Phœnix Iron Works, Charleston, asks "Why there is no power gained in the lever?" The answer to this question depends on what you call "power gained;" if you mean, for instance, that with 50 lbs you may lift 400 or 600 lbs., there appears to be a gain of power; but when you take into account that what you gain in weight lifted, you lose in space through which your power must move, as compared with the space moved through by the load, you gain nothing. For instance, 600 lbs. lifted one inch, requires no more power than is required to lift 50 lbs. one foot. In this sense there exists no such thing as a gain in power by any mechanical contrivance. A horse power or a man power is and remains a horse power or man power, by whatever contrivance it is made to act on any load to be moved.

NEW PUBLICATIONS.

The Boston Machinist—Being a complete school for the Apprentice, as well as the advanced Machinist. Showing how to make and use every tool in every branch of the business, with a treatise in screw and gear cutting. By Walter Fitzgerald, Inventor and Mechanical Engineer. New York: John Wiley & Son, 535 Broadway. 1868.

In preparing this work, the author has endeavored to give to the mechanic a volume that he can readily understand, though he may not have a full knowledge of the scientific terms commonly used in works of this kind. He has also aimed to give a full explanation of every subject treated of, in as few words as possible. He commences with the Apprentices' first lesson, which is: "To Clean and Keep in Order the Lathes, Planers, Drills, Milling and Slabbing Machines," etc.; and as simple as this lesson may be, we have seen many an older workman that might practice it with profit to himself, and a benefit to the machine that he operates upon. At the close of the work is another lesson entitled a "Few Words as to Master Mechanics," that must forcibly impress the value of its teachings on those who believe the maxim that "time is money." The entire body of the work is filled with laconic directions and useful hints that nearly every machinist and mechanic can peruse with pleasure and profit.

The Art of Saw Filing, scientifically treated and explained on philosophical principles, with full and explicit directions for putting in order all kinds of Saws, from a Jewelers' Saw to a Steam Saw-mill. Illustrated by forty-four engravings. By H. W. Holly, author of "The Carpenters' and Joiners' Hand-Book." Third edition. New York: John Wiley & Son, Publishers, 2 Clinton Hall, Astor Place. 1868.

Simple as the art of filing of a saw may seem, nevertheless it is a very common remark that but few are expert in it, or thoroughly understand the implement that they attempt to keep in order. In this little hand-book the author, after giving the origin of the saw, passes to the principle of its construction, and follows it through its several varieties, giving plain and concise directions for the management of each. The book is of a size convenient to be carried in the pocket, and to the newly initiated, as well as the older mechanic, it must prove a work of instruction.

Original Papers.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

THE ROASTING OF METALLIC SULPHIDES OR SULPHURETTED ORES.—No. II.

BY PROFESSOR H. DUSSAUCE, CHEMIST.

In comparison to furnace roasting, roasting in heaps in the open air requires very little combustible. When the piles of matte or ore are once arranged and ignited, but little care need be taken—the operation goes on, for the most part of itself. As regards dimensions, the heaps can be made, within certain limits, of any convenient length, breadth, and height. Another great advantage that obtains in this method of roasting lies in the fact that it is not necessary to pulverize the ore. The operation goes on, indeed, with greater rapidity on account of the ease with which the air can circulate through the mass. The chemical reactions go on well when the mass is in a granulated state, the particles being of the size of peas, or when it is composed of pieces of about an inch in diameter; they may, however, be of a larger size when the ore is very combustible in its nature. In all cases it is necessary to aid the circulation of the air by means of chimneys constructed at different places in the heap. Should the ore be in a finely divided state, it is necessary first of all to agglomerate it by means of lime, or clay. It can then be made into bricks. Without such a course of procedure, the roasting will not go on well. Either the chimneys will fall in, or other obstacles will intervene to prevent a free circulation of the air, such for instance as packing.

There are besides other inconveniences in this method of roasting. The depressions that are brought about cause at such points rapid currents of air. The result of these is too strong a heat, and a consequent fusion and volatilization of any metals that are subject thereto. Moreover, complete stagnation ensues as regards the roasting process, nor is it possible afterward to re-establish the normal condition of the operation. Again there are other inconveniences arising from the slowness with which the operation goes on. It often requires several months to effect a complete roasting of the ores. This of course necessitates a large stock at all times on hand. Still further, other inconveniences are found to result from the unequal temperature that obtains in the roasting mass. Those parts near the combustible used are commonly fused, while the outer portions of the heap, on account of their being in constant contact with the cold air, even if at all, are never well roasted. It is plain therefore that only a fraction of the mass, say from one-third to one-half, is properly roasted. Notwithstanding the above inconveniences the economy of the process, and the success to be looked for in case proper care is taken in the arrangement of the heaps render the employment of this method well worthy of consideration. The choice of methods must, however, be determined by local circumstances, and the character of the product that it is necessary to obtain. By these, of course, the intelligent metallurgist will be guided.

The manner of arranging the heaps for roasting varies a good deal. They may be square, rectangular or circular, and of various sizes, as regards length, breadth, diameter and height. The latter will be determined, in a greater or less degree by the tendency of the ore to pack. Sometimes they are under cover, then again in the open air, or again protected upon one or more sides from prevailing winds. With proper reflection upon the above observations it will always be easy to choose the most convenient method, in order to bring about any desired result. In order, however, to be more explicit we will describe the construction of a heap of ores that are to be desulphurized as much as possible in view of being afterward smelted.

Upon a bed of well-beaten clay, or better still upon a foundation of stones, construct a circular enclosure of six or eight feet in diameter, and two and a half feet in height. Over the bottom of this enclosure place a layer of *scoria*, some six inches in thickness. This will enable the air to have free circulation at all points underneath the base of the heap. Upon this layer of *scoria* comes a bed of coal or wood, from nine to twelve inches thick. The fuel should be packed so as to leave as little empty space as possible, as enough will be formed during the combustion. Five chimneys may be constructed, one at the center, the others at points equally distant from the center of the enclosure. These should be made of large chunks of coal, kept in place by means of the largest pieces of the ore This done, a layer of the coarsest and most refractory ore is placed upon the bed of fuel. It should have a thickness of some six inches. Upon this comes a layer less course and refractory; and finally a layer of ore agglomerated by means of lime or clay—if all these different kinds are to be had. These three layers of ore should all together have a height of some eighteen inches. Another bed of fuel similar to the first should now be placed upon the layers of ore, care being taken to build up the chimneys as above explained, and then other layers of ore in like manner as before. Above the limits of the enclosure, a hemispherical form should be given to the heaps. Agglomerated ore should not be put on the outside; as the temperature is less elevated there, than it is within. Such a heap should be about five feet high, and contain from five to seven tons of ore. It should burn from two to three weeks. Ignition is effected by throwing a few lighted coals into the chimneys. In a few hours the fire will have spread through the entire mass of fuel. The parts of the heap nearest the circumference are first roasted. They may be taken away and a portion of the layer of *scoria* removed at these points, in order to allow the air to penetrate more freely into the center of the mass. This must, however, be done with a good deal of care. A little practice will soon tell one what modifications are necessary, in order to roast different kinds of ores. In the subsequent roastings, the ores that have been imperfectly roasted in the first, are mixed with raw ones. They form from one-fourth to one-third part of the entire mass.

Correspondence.

[To insure insertion of correspondence in our columns, the full name and address of the writer must be given.]

Goshoot Lake.

WASHINGTON, Oct. 13, 1868.

EDITOR AMERICAN JOURNAL OF MINING:—

In your article, headed "Mirage," there is, no doubt, an error. Not in its first paragraph; for truly the picture often presented is cool and refreshing to look upon, but adds to the thirst of the weary traveler. It has so been considered for ages, and Humbolt, in his "Views of Nature," page 127, says: "The well-known phenomenon of the mirage is called in Sanscrit 'the thirst of the gazelle.'" But Goshoot Lake, the instance cited, can hardly be considered a *mirage*, notwithstanding those who have "recently gone nearer" and found that lake "an alkali flat."

Goshoot Lake was first mapped in 1854, by Lieut. E. G. Beckwith, U. S. Army, when on a reconnoissance for a Pacific Railroad route. While encamped in a pass to the south of the one designated as the Goshoot Pass, May 17th, 1854, he discovered, in looking west from a high ridge near camp, a narrow lake extending for several miles along the base of a mountain range on the west side of the valley, and the following day, May 12th, after a march of 18 1-4 miles, he says: "The road was dry and hard, and the artemisia, which covered the whole face of the country, small. The water of Goshoot Lake is shallow and bitter, and its banks miry. Crossing below its foot, which sometimes overflows and sends out a small stream to the north, we encamped among numerous fine springs of fresh water, around which the fresh grass is just springing up, and the willows are just beginning to show their leaves. The day has been the first we have enjoyed, and as yet (3 o'clock, P. M.) we have seen no rain falling in the mountains." Certainly, had there not been a lake, he would hardly have reported its water bitter; and as no rain was falling in the neighboring mountains, it could not have been a temporary or recently-formed lake. This basin, however, receiving a large amount of water from the surrounding mountains, must, during heavy rains or the melting of snow, have contained a lake until evaporation should exhaust the water, for there appears to be no drainage, and the surface of the dry beds found are usually of indurated clay, whitened by an alkaline deposit.

One of your fellow-citizens, whose office is not far from 37 Park Row, was of Lieut. Beckwith's party, and he, perhaps, can give information not to be found elsewhere, and certainly more reliable than "those who have recently gone nearer yet" to this mythical lake. G.

[The line between true lakes and mere "alkaline flats" in the central part of this continent, is not very easily drawn. The alkali flats, at certain seasons or after heavy rains, are covered with water. We are not in possession of the exact circumstances under which our informants (two gentlemen, now resident within fifty miles of the locality) visited the place, saw what appeared to be a lake, and found it to be none; but we shall refer to them for further particulars. Meanwhile, we do not think the extract from Lieut. Beckwith's journal, given by our correspondent, settles the case. Admitting all the facts there mentioned (as we certainly do) it may still be that Goshoot Lake is but rarely filled with water; and certainly it is but a shallow pool, quite unlike the other great central lakes, and no more worthy to be put down than any of a thousand such insignificant sinks and puddles, which are not on any map. Finally, even if Goshoot, is or has been sometimes a lake, it is a first-rate *mirage* when it is *not* a lake!—ED.]

Krom's Dry Ore Concentrator.

NEW YORK, Oct. 15, 1868.

EDITOR AMERICAN JOURNAL OF MINING:

In your notice of my Dry Ore Concentrator last week you made one mistake. You say, "Several similar machines have already been introduced into the iron regions of Northern New York, and are doing splendid work in cleaning the ores." There are several machines of my invention in the iron regions of Northern New York, but they are not similar to the one you saw in operation at No. 40 West 18th St., which you deemed to work splendidly, and of which you took sketches—these already introduced as above are earlier inventions of mine, and work pretty well, but do not satisfy me now, and certainly do not compare with my later machines in the quantity or quality of work done in a given time.

S. R. KROM, Engineer.

Beneficial Influence of Scientific Associations.

The following summary of the remarks of Professor S. D. TILLMAN, at the opening of the Polytechnic Branch of the American Institute, on Thursday the 10th inst., accidentally came to us too late for earlier publication. They are excellent—too good to be lost to our readers. The Professor said:

"Nothing more was needed to confirm the general opinion as to the benefits arising from these annual gatherings. They accomplish for science what conventions do for religious, political, and commercial objects, by securing unity of purpose, concentrated effort, and expeditious action. Indeed, they do much more, in dispelling illusions, which are often palmed off as truth among those who are only captivated by novelty. While discovery is constantly extending her domain, opening new paths of progress, and erecting new beacons, to direct those who are to follow, it is the special duty of advanced men to see that no false lights are shown which would lead to the propagation of unsound doctrine. Every new hypothesis or induction should be subjected to the keenest scrutiny of those who are competent to pass upon its merits. A scientist, who reads his paper before his peers, reaches at once the appreciative audience he most desires. If he describes new experiments, they, more than others, are interested in the results; if he advances new views, they are ever ready to question the correctness of his conclusions. Thus, it frequently happens, that the discussion immediately following the reading of a paper, will dispose of objections, and establish positions which could not be reached in a long time through the medium of printed dissertations. Moreover, the suggestions often thrown out during the free exchange of ideas in a verbal debate, are of great service in exciting that enthusiasm in the votary of science which prompts him to higher efforts in the pursuit of truth.

"The beneficial influence of these scientific associations is not so obvious here as in Europe, where they are older and more firmly established. Of late, the British Association for the Advancement of Science has accomplished much; yet it will be remembered that, even after its formation, Sir John F. W. Herschel, in a note appended to his able treatise 'On Sound," in the *Encyclopædia Metropolitana*, acknowledged his indebtedness to foreign journals for a portion of the information he then presented, and expressed his regret that so little attention was paid in his own country to what was being done by scientific men abroad. 'Here', said he, 'whole branches of continental discovery are unstudied, and indeed almost unknown, even by name. It is in vain to conceal the melancholy truth. We are fast dropping behind. In mathematics we have long since drawn the rein, and given over a hopeless race. In chemistry the case is not much better.' These, and other words of regret and reproof then written, doubtless hastened the great and favorable change which has since taken place in his country. Certain it is, that the formation of the British Association has led to the happiest results; for to-day it may boast of many distinguished names in almost every branch of science.

"If there is any hindrance at present to the progress of truth, both here and abroad, it arises chiefly from the spirit of exclusiveness sometimes evinced by those who have devoted their lives to the study of physical laws. This should not excite surprise, because the tendency of abstract science is essentially aristocratic. The man who knows, stands on a higher plane than the one who does not know. Hence, the position of the scientist is impregnable. He has riches and power, of which he cannot be robbed. Should he find his chief enjoyment, however, in the reputation he has acquired, he may well fear rivalry. On the other hand, if he pursues truth for the love of it, he will welcome all who labor in the same spirit, and extend to those below him a helping hand.

"The study of natural laws, in the abstract, undoubtedly affords pure enjoyment; yet this feeling is vastly intensified by witnessing their successful application for the accomplishment of new and important results in the useful arts. Such results are often brought about by the artisan who, although he may know but few of these laws, understands most thoroughly all the conditions peculiar to his art, under which they can be effectually applied. Our great inventors have not, generally, had the advantage of a liberal education. By ingenuity alone they take the lead, and, of course, counteract to a certain extent the haughtiness sometimes engendered by learning.

"Scientific associations will be entirely successful when they fully recognize the fact that Science in these modern times has a double mission. From serene heights she beckons on the student who longs for clearer views of the divine plan of the universe; yet often she descends to the humblest abodes of men, and watches while invention weaves some new device. Thus, we find her potent influence in those improvements which lessen manual labor, supply corporal wants, and add to the material resources of our race. We, of the Polytechnic, welcome her in both offices, as revealer of long hidden links in the endless chain of sequences, and as prompter to new combinations of some of those links by which the surplus powers of nature are successfully applied to ingenious mechanism, and by which even new forces are generated, and made obedient to the will of man."

The new Haupt Rock Drill.

The London *Mining Journal* furnishes us with the following interesting description of the working of the above drill:

The machine is exceedingly simple in construction; it stands about 38 inches high, and weighs only 150 lbs., and requires but one man to operate it. All the working parts are constructed of hardened steel, in order to bear the strain of severe work. It is fixed in a simple frame, which has four adjustable legs, and weighs about 90 lbs.; the machine and frame being easily moved by two men. The machine gives the drilling tool the same three motions that are observable in hand drilling—the stroke, the revolution, and the feed. All these motions are automically made by the machine, and are self-adjusting to all differences in the hardness of rocks, or varying speed of penetration. The motive power is steam, but may be compressed air, which operates upon the piston in a small cylinder, and gives the drill the impetus necessary to carry it through these motions at the rate of 400 to 500 strokes per minute, the force of the stroke being estimated at 200 lbs. To work effectually it requires about 2-horse power of steam, at 30 lb. to 40 lb. pressure. This power is easily obtained by a portable boiler at a very small cost, but on the present occasion a flexible tube was attached to the locomotive in the quarry. The rock operated upon was a seam of limestone of the hardest texture. The machine was placed upon a flat surface, and occupied a space of 2 feet square. A 1 5-8 in. drill was then placed through the cylinder, and the machine was at once in motion, hammering away at full speed. A jet of water flowing into the bore-hole absorbed the dust and kept it cool. In four minutes the tool had gone to a depth of 16 inches, and was exchanged for another one. This operation occupied less than two and a half minutes, and the machine was at work immediately, this time with a 1 3-8 inch drill, upon the same hole, and in three minutes a further depth of 15 inches or 5 inches the minute, was attained. Thus a good blasting hole was made in the hardest rock 31 inches in depth in less than ten minutes, including adjusting the machine, and changing the drill; an operation that would have taken in the ordinary way two men something like two hours. The machine was then removed to other parts of the rock, and a number of holes bored, all with the same successful results. The gentlemen present appeared much interested in the experiments, and expressed their satisfaction with the results. In reply to the numerous inquiries made, it appeared the rock-drilling machine is easily fixed for horizontal, vertical, or angular drilling, and can be adjusted on any surface, however irregular. It is thus equally adapted for driving levels or sinking shafts and for open quarry work; and, judging from the experiments of the day, it is calculated to work a revolution in quarrying operations, so far as relates to rapidity and effective action. The various experiments occupied several hours, and the gentlemen present manifested great interest, and several, including Mr. Shepherd, manager of the works expressed their entire satisfaction with the results.

Special Notices.

Can any one Beat This?

OLD SAYBROOK, Conn., Sept. 26, 1868.

Messrs. Wheeler & Wilson.

GENTLEMEN: I wish to say that I have in my family a "Wheeler & Wilson sewing machine," that has been in almost *daily* use for the past ten (10) years, and not a thing has ever been done to it in the way of repairing; not a screw loose, or any part of it out of order in all that time. It has been used in making coats, vests and pants, of the thickest of woollen goods, besides doing all kinds of family sewing, and is now, this day, the best machine for working I ever saw.

Can any one beat this?

Respectfully, GILBERT PRATT.

Any one who can beat this (and we think many can) will please address

Messrs. WHEELER & WILSON,
625 Broadway, New York.

The way traffic of the Central Pacific Railroad is already greater than the present supply of rolling stock will accommodate, and increases as fast as the track is extended The net earnings, over and above expenses, for the current year will be *more than a million in gold*, and the through line will be opened next summer. At this time the SIX PER CENT. (GOLD) FIRST MORTGAGE BONDS can be had at 103 and accrued interest in currency.

For sale by Banks and Bankers, Agents for the Loan, and by FISH & HATCH,
General Financial Agents Central Pacific Railroad Company, 5 Nassau street, New York.

Patent Claims.

Interesting to Miners, Millmen, Metallurgists, Oil-Men, and Others.

82,730.—AMALGAMATOR.—George A. Mariner and Julian Kune, Chicago, Ill.:

We claim, 1st, The cylinder, a, c, provided with the conical plate or bottom, b, in combination with the cylinder, d, f, supported above the bottom, substantially as shown.

2d, The annular plate or diaphragm, e, to regulate the dispersion of the ores, when provided by the rods, U, substantially as specified.

3d, The perforated annular plate, r, when provided with the rods, substantially as and for the purpose described.

4th, The inclined partition or chute, B, constructed and operating in combination with the discharging-spout, v, substantially as specified.

5th, The tube or pipe, b, when made to pass through the furnace, w, in combination with the escape or condensing-pipe, G, substantially as and for the purposes specified.

6th, The extension feed-pipe, l, g, whether used with or without a screw-carrier, substantially as specified.

82,745.—QUICKSILVER-FEEDER FOR QUARTZ MILLS.—John Pattison, Nevada, Cal.:

I claim, 1st, The quicksilver fountain, C, with the vertical pipes, D and F, above and below the horizontal shaft, substantially as described.

2d, The cup, G', in the horizontal shaft, E, graduated by the set screw, G, or their equivalents, substantially as and for the purpose described.

3d, Coupling the shaft, E, E, together by the slotted ring, H, and keys, H', H', and operating the machine by the lever, K, pawl, K', and tooth-wheeled J., the whole constructed and arranged to operate substantially as described.

82,877.—PROCESS OF ELECTRO-PLATING WITH NICKEL.—William H. Remington, assignor to himself, Sarah A. T. Peabody, and George D. Allen, Boston, Mass.:

I claim suspending or supporting or holding a mass of the particles of nickel within the solution so as to present an extended surface, and connecting them with the positive pole of the battery by means of platinum or other suitable conductor of electricity, not materially affected by the electric current or the solution employed, substantially as described.

Also, a positive electrode, composed of a plate of metal, carbon, or other conductor of electricity, upon which a coat of nickel of sufficient thickness shall have been deposited, substantially as set forth.

Also, the within-described solution, prepared of the ingredients and in a manner substantially as described.

Also, a substance coated or plated with nickel, as herein set forth, as a new article of manufacture.

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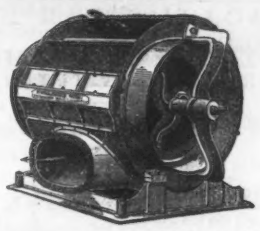

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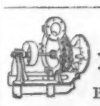

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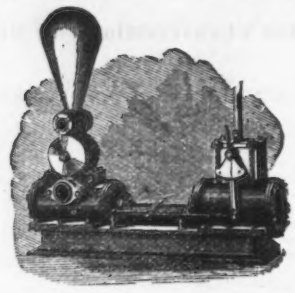

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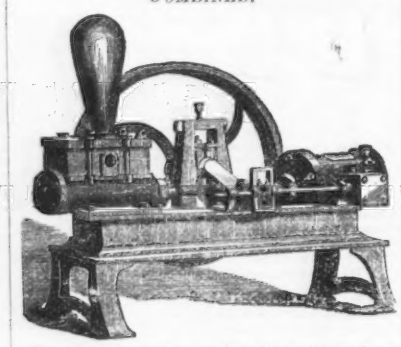

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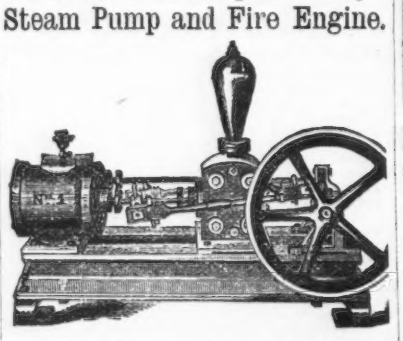

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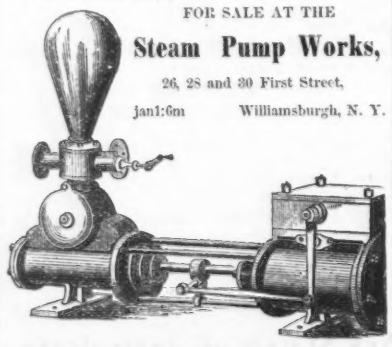

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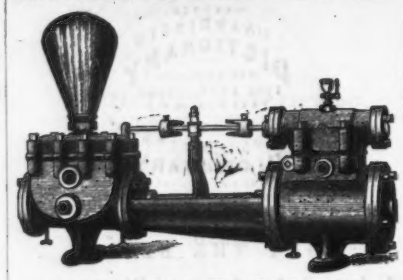

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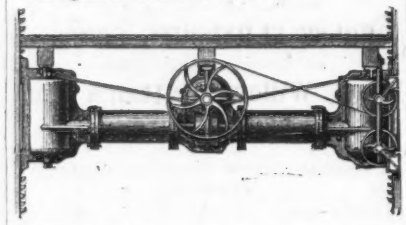

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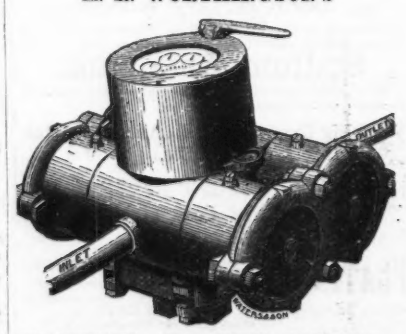

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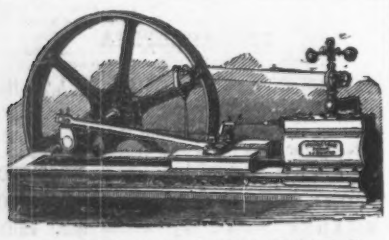

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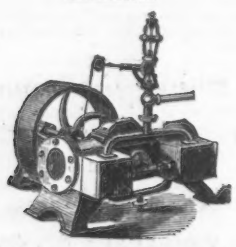

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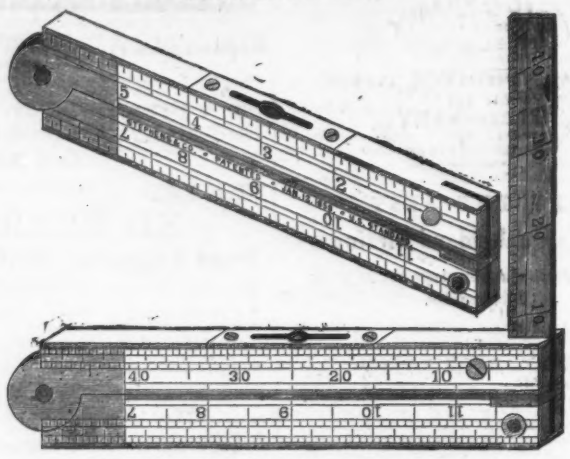

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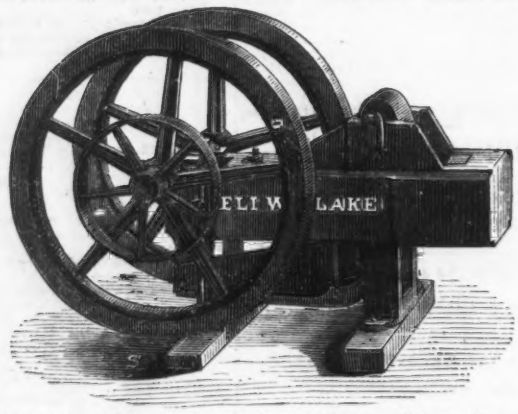

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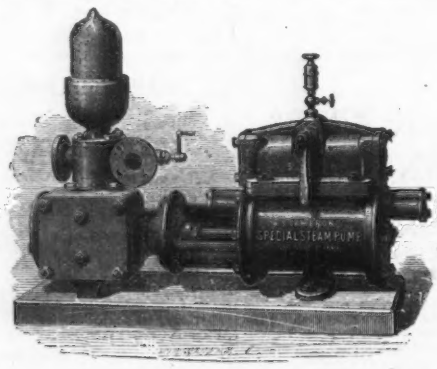

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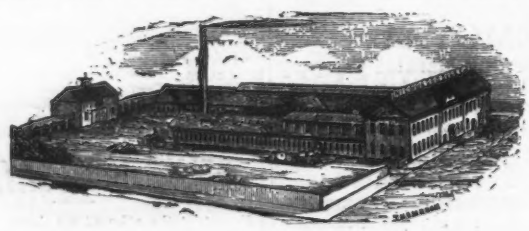

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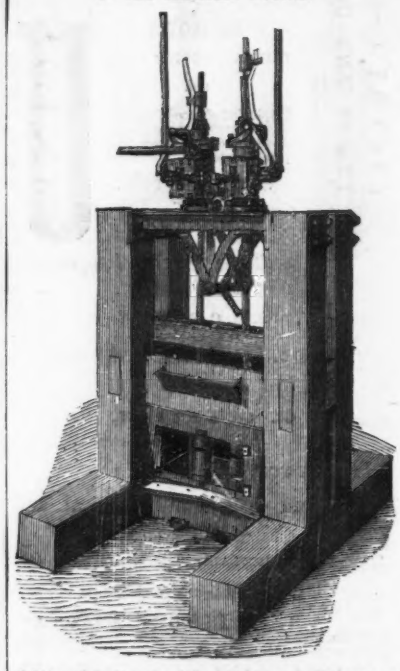

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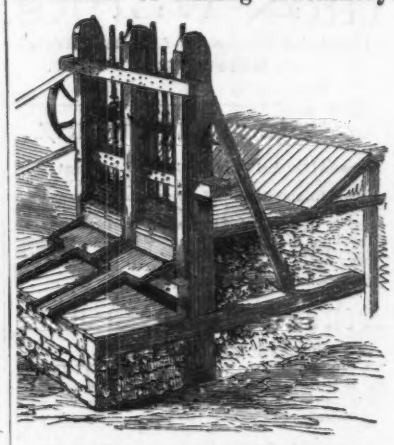

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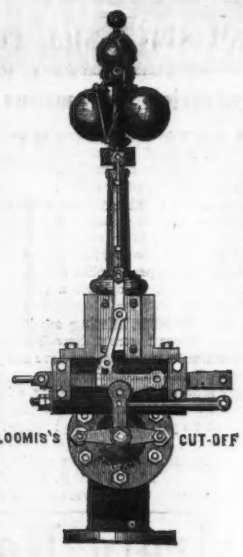

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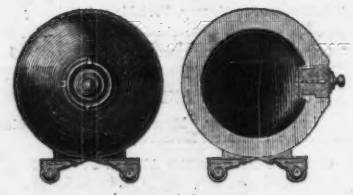

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